THE UNIVERSITY OF ALBERTA

TEACHERS' PERCEPTIONS OF WRITING QUALITY

AND

CRITERION LEVELS OF COMPOSITION

by

© THOMAS WILLIAM PATRICK DUNN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF SECONDARY EDUCATION

EDMONTON, ALBERTA

FALL, 1982

Alberta

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July 15, 1982

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ABSTRACT

This study was concerned with investigating the relationship between teachers' perceptions of writing quality and certain quantitative variables. As a guide to the study, a conceptual schema consisting of four "levels" of composition (the Pre-Verbal Level, the Level of Diction, the Level of Syntax, and the Level of Rhetoric) was proposed. In turn, certain variables, identified during a review of the existing literature, were attached to these various "levels". These were

1. at the Pre-verbal Level, Spelling Errors per 100 Words
2. at the Level of Diction, Words of Three Syllables per 100 Words, Words of Four or More Syllables per 100 Words, Different Words of Four or More Syllables per 100 Words, and Errors in the Use of Words of Four or More Syllables per Total Number of Words of Four or More Syllables Used
3. at the Level of Syntax, Words per Clause, Clauses per T-unit, Words per T-unit, T-units per Sentence, Words per Sentence, and Sentence Errors per 100 Words
4. at the Level of Rhetoric, Cohesive Devices per Sentence.

An additional variable, Total Words Analyzed, was also examined.

Quantities for all thirteen of these variables were determined for a sample of 100 compositions drawn from a larger sample which was, in turn, drawn from compositions written as a result of the Alberta Written Composition Achievement Test for 1978. Twenty-five compositions were studied from each of four grading categories (1,2,3, and 4 -- 1 being perceived by teachers as being of lowest quality and 4 of highest quality).

Three statistical procedures, one way analyses of variance, Pearson product-moment correlations, and a multiple stepwise regression analysis, were applied to the quantities determined for the thirteen variables. Significant differences in the quantities (significant at or beyond the .05 level of confidence) existed for ten of the thirteen variables, excluding Words per T-unit, T-units per Sentence, and Words per Sentence.

The study concluded that quantitiative variables which could be related to teachers' perceptions of writing quality do exist, but that, since significant differences existed at all four "levels" of the conceptual schema, no one "level" could be regarded as a sole or best indicator of quality in writing.

ACKNOWLEDGEMENTS

The writer owes a great debt of gratitude to Mr. John Wood, Associate Director (Humanities) of the Student Evaluation Branch of Alberta Education. Without Mr. Wood's generous offer of the sample of compositions herein examined, this study would never have been conducted. Gratitude is owed, also, to the members of the writer's examining committee, especially to Dr. R. Glenn Martin, Chairman. Dr. Martin's technical advice and moral support have been responsible, in the main, for any success to which the following study might lay claim.

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CHAPTER I

THE PROBLEM

INTRODUCTION AND CONCEPTUAL SCHEMA

Ever since Aristotle wrote the Poetics, man has been analyzing his own written communication in an effort to determine its quality. What does quality writing consist of, and how does writing that is determined to be of high quality differ from that which is determined to be of low quality? These are questions that plague teachers of English who, as part of their duty as educators, must evaluate the writing of their students.

Evaluation of writing is probably the most onerous of the jobs undertaken by English teachers. Certainly it is one of the most time-consuming. When faced with the job of ranking a set of papers, the teacher is faced also with a dilemma. Not only must the teacher determine the relative quality of the compositions in front of him, but, if he is to have any credibility, he must do so in terms that are fairly unambiguous and accountable. He must, in some way, reduce quality of writing to quantifiable criteria upon which to base his decision. He must, somehow, objectify the subjective.

English teachers, in deciding upon which evaluative criteria to use when determining the quality of a composition, have a wide range of factors to choose from -- content, organization, diction, sentence structure, usage, mechanics, style, tone; all have been and continue to be used by English teachers when grading compositions. Any criteria chosen as aids in evaluation by an English teacher will help to objectify his decisions concerning the quality of compositions. Obviously,

however, the best criteria will be those which will be considered valid by other teachers and by those students whose work is being graded. One set of criteria which should be seen to attain a high degree of validity is one that evolves from an examination of the process of composition itself. Composition is a process by which small units are joined to become larger and yet larger units which, in turn, are eventually forged into a coherent and unified whole. Written composition moves, although not necessarily consciously, from the phoneme to the syllable, to the word, the phrase, the clause, the sentence, the paragraph, to the composition itself. It is the combination of units, especially from the word (or morpheme, the smallest unit of meaning) on up to the composition, which creates meaningful expression. As Susanne Langer states in Feeling and Form

> As soon . . . as words taken to denote different things are used in combination, something is expressed by the way they are combined. The whole complex is a symbol, because the combination of words brings their connotations irresistibly together in a complex, too, and this complex of ideas is analogous to the word-complex. (1953: 30)

The ability to join units to produce a meaningful and expressive whole is perhaps the mark of a skillful writer, and those compositions which contain units skillfully forged together may be those perceived by readers as being of best quality.

Thus compositions can be seen to exist on various levels which, themselves, can be used as criteria in the evaluation of writing. Four such levels are the pre-verbal level, the level of diction, the level of syntax, and the level of rhetoric.

The pre-verbal level is "sub-word" in nature, the level of the phoneme. Errors made on this level are errors of spelling and are restricted to writing since the speaker cannot really make errors of spelling.* Certainly, "errors" of pronunciation in speech can be translated into errors of spelling in writing. Consider, for instance, the popular "could of" used in place of "could have" by many students. There is a difference, however, between hearing "I could of gone home" and reading it. Although the listener perceives no error, the reader does.

The second level, that of diction, is the level of the word. Errors made at this level are errors of meaning, either flagrant or subtle. A flagrant error would be the use of a word so incorrect that it sharply interferes with the message being conveyed by the composition. Consider, for example, the following sentence: It was considered a boom to have more experience. It might be argued that "boom" in the sentence above is really an error of pronunciation in speech translated into an error of spelling in writing. However, since "boom" is a word in its own right, and since it conjures up its own associations in the mind of the reader (and in the mind of the listener, unlike "of" in the previous example), its use here is really an error of diction. Although the replacement of "boon" with "boom" might elicit a chuckle from the reader, the communicative power of the sentence is reduced. An example of a less flagrant error manifesting itself on this

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*Morphemic errors can also be made at the pre-verbal level. The writer who writes "oxes" rather than "oxen", or "unvalid" rather than "invalid" is misusing morphemes rather than phonemes.

level might be the use of an adjective as an adverb as in the following sentence: I walked her home real slow.

The third level, that of syntax, is the level of the sentence. Perhaps the simplest of all errors which occur at this level are errors of punctuation which result in sentence fragments masquerading as sentences or in run-on sentences caused by the comma splice or fused sentence, and which can cause ambiguity and deflect the reader's attention away from the message of the composition in which they reside. Many other types of errors may be encountered by the evaluator at this level from simple usage errors such as faulty agreement between subject and verb to more complex structural errors such as faulty use of parallel structure or interrupted movement.

The final level of the composition is that of rhetoric. This level consists of "those aspects of writing which are larger than the unit of the sentence" (Braddock et al, 1963: 38), and is, in fact, the level of the composition itself. Two sub-categories of errors can be found here -- organizational errors (errors which compromise unity and coherence) and content errors (errors in the interpretation of reality).

The levels conceptualized cannot be seen as being mutually exclusive, however, since there are other criteria which can affect them. Although the pre-verbal level, for example, is essentially mechanical in nature (there is a definite "right way" to spell any given word), mechanics is not restricted to this level. Subject-verb agreement is mechanical, but exists at the level of syntax. The agreement between a pronoun and its antecedent is mechanical, but exists at the level of

rhetoric if the antecedent is in one sentence and the pronoun referring to it is in another.

Mechanics deals with those conventions of the language over which the writer has no choice (Eley, 1953). Style, the criterion where the writer's choice is involved, can also be seen to affect various levels within the conceptual schema. Certainly the writer can make choices at the levels of diction, syntax, and rhetoric. He can even choose to misspell a word for purposes of characterization, or for other effects.

Semantics also affects various levels of the conceptual schema. Obviously, the choice of words at the level of diction will affect the meaning being conveyed by the composition. Subtle shades of meaning can be manipulated by the skillful writer aware of the connotations of words. At the level of syntax, semantics can play a crucial role. Although they contain exactly the same words, the two sentences "The dog bit the man" and "The man bit the dog", convey vastly different meanings. And at the level of rhetoric the meaning of a composition will definitely be affected by its method of organization.

Logically, the quality of a particular composition could vary from level to level; for example, its quality on the pre-verbal level could be quite high, but its quality on any or all of the other levels could be quite low. The reverse could also occur. Because of this, it would seem that all levels are important and that the evaluator must consider all levels when attempting to determine the quality of a particular piece of writing.

But is this necessarily the case? Perhaps the presence of quality on one level will be indicative of quality on all of the other levels, or perhaps a high level of quality on one level will reduce the effect of errors committed on other levels. If so, determining which level is the indicator of quality should be of interest to English teachers in particular and to evaluators of writing in general.

THE NEED FOR THE STUDY

Since the advent of transformational grammar with Noam Chomsky's Syntactic Structures (1957), much research has been done on the development of written syntax. Kellogg Hunt (1965, 1966, 1970), in particular, has examined the syntactic complexity of writers of various grade levels, and has determined that syntactic complexity increases with both chronological and mental maturity. Other researchers, such as Bateman and Zidonis (1966), Mellon (1967), O'Hare (1973), and Combs (1976) have developed programs based on transformational models which concentrate on sentence-embedding and combining in an effort to increase the syntactic complexity of students' written work. Implicit in all of this research, although seldom explicitly stated, is the notion that increased syntactic complexity equates with increased quality of writing. The danger of this implication is that sentence-combining programs may be viewed, by teachers in the field, as panaceas for curing the ills of student writing. If it can be demonstrated that the quality of writing is determined by more than syntactic complexity, that levels other than the level of syntax also affect quality, perhaps

this danger can be averted. If, on the other hand, syntactic complexity does determine the quality of writing, then more justification can be found for placement of sentence-combining programs within the English curriculum. Either way, this study should have implications for teachers in the field and for program developers.

STATEMENT OF THE PROBLEM

The problems to be investigated by the study are:

1. What aspects of written composition have the most impact upon its quality as perceived by English teachers?
2. What is the relationship between quality of writing and syntactic complexity?
3. What variables, if any, other than syntactic complexity, are related to the quality of writing?

THE PURPOSE OF THE STUDY

There are four major purposes of the study. They are:

1. To develop an original conceptual schema for understanding written composition.
2. To isolate that variable (or set of variables) within each of the levels in the conceptual schema which will correlate most highly with writing quality as perceived by teachers of English.

3. To determine if any one level within the conceptual schema is a best indicator of writing quality as perceived by teachers of English.
4. To evaluate the validity of the conceptual schema.

DEFINITIONS

Terms that are of central importance to the present study include:

1. Quality of Writing. For the purpose of the present study, quality of writing (writing quality) is defined operationally as correlative to the score given holistically on the 1978 Alberta English Written Composition Achievement Test for English 30 and 33. The higher the score received by the composition, the higher is the quality of writing within it.
2. Error. The meaning of the term "error" will be similar to that used by Eley (1953) who defined an error as "an instance where usage obtrudes as figure, thus overshadowing the running meaning intended as figure by the writer" (86). An error can be seen as a violation of a grammatic, semantic, syntactic or rhetorical "rule" that deflects the reader's attention away from the message present in the composition.
3. Syntactic Complexity. This term will refer to the degree to which structural devices are present in the syntactic unit being examined. A more complex unit will contain a greater array of structures

(embeddings, phrases, dependent clauses, etc.) than a less complex unit.*

4. Syntactic Fluency. This term refers to the length of the syntactic unit being examined. Longer units will be considered more fluent than shorter units.
5. Syntactic Maturity. Following Hunt this term will designate the syntactic "characteristics of writers in an older grade" (1965: 5).
6. T-unit. This is a basic syntactic unit considered "the shortest grammatically terminable unit into which a connected discourse can be segmented without leaving any fragments as residue" (Hunt, 1965: 34).
7. Clause. For the purpose of the present study a clause will be a structure which includes a subject, or coordinated subjects, and a finite verb phrase, any part of which can also be coordinated (Hunt, 1965: 15).
8. Optimal Variable. The optimal variable (or set of variables) within any level of the conceptual schema is that variable (or set) considered by the researcher that demonstrates the most significant difference when correlated with writing quality. The study can make no claim to have uncovered, out of the multitude of possible variables that could conceivably be correlated with writing quality, the most significant variable (or set of variables).

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*The three terms "syntactic complexity", "syntactic fluency", and "syntactic maturity" are related both theoretically and practically and, because of this, can be taken to be roughly synonymous.

9. Level of Rhetoric. For the purpose of the present study, the level of rhetoric will simply be that level within the composition which subsumes the unit of the sentence. The traditional definition of rhetoric as being persuasive or decorative language (Frye, 1973: 245) will not be used in this study.

LIMITATIONS AND ASSUMPTIONS

This study was restricted to an analysis of the writing of a representative sample of Grade 12 students enrolled in either English 30 or English 33 in Alberta in June of 1978. Because the sample was made available by Alberta Education and because it was considered to be privileged information, certain other restrictions were brought into being. For instance, IQ scores of the various writers in the sample were not known. Neither was sex known.

The study was further limited because all of the writing in the sample had been produced in a testing situation. Students were only allowed two hours to write the compositions present in the sample. It is conceivable that, due to the "first draft" nature of the compositions, graders were more lenient with the sample than they would have been had students been given ample time for revision. This is a serious limitation since it may restrict generalization, and thus affect the external validity of the study.

The study was limited to an examination of a rather arbitrary selection of variables at each of the criterion levels. The choice of these variables was governed by their potential usability and

objectivity. The study can in no way claim to have uncovered all variables which affect the quality of writing.

The major assumption of this study was that the holistic score given to the individual composition in the sample was truly representative of its quality. It was, and continues to be, the assumption of the researcher that experienced English teachers can, and do, recognize quality in writing, and that the holistic method of scoring was able to guard against the possibility that an individual composition could receive an inappropriate score. (See Appendix A.)

CHAPTER II

A REVIEW OF THE RELATED LITERATURE

INTRODUCTION

The following literature review is concerned with uncovering what seem to be the optimal variables of interest to the present study -- that is, those variables existent within the four criterion levels that will relate most significantly with teachers' perceptions of writing quality. For a variable to be considered optimal here, it will have to achieve a high degree of face validity, reliability, objectivity, and, perhaps most important, utility. The advice of Braddock et al is appropriate here. They suggest, "Instead of counting many different types of items to study a larger area of concern, investigators should seek to discover certain key situations which are indices of larger areas of concern." (1963: 21, the italics are theirs.) For the present purpose, the "larger areas of concern" are the four criterion levels (pre-verbal, diction, syntax, and rhetoric) and the "key situations" are the optimal variables.

This review is separated into four sections, each of which is concerned with a particular level within the conceptual schema. The sections are:

1. Quality at the Pre-verbal Level
2. Quality at the Level of Diction
3. Quality at the Level of Syntax
4. Quality at the Level of Rhetoric

Emphasis is given to the section dealing with syntax, since most recent research examining student writing has been concerned with this compositional level.

QUALITY AT THE PRE-VERBAL LEVEL

A review of the literature related to the present study quickly indicates that most researchers do not consider those variables existent at the pre-verbal level to be of particular importance to writing quality. Indeed, it is the standard practice of researchers to correct compositions for spelling, punctuation, and often for usage, and to have compositions typed to "correct" for handwriting, prior to evaluation. O'Hare goes so far as to state, in Sentence Combining: Improving Student Writing without Formal Grammar Instruction:

> This study was interested in the students' writing ability and not at all in their spelling, punctuation, or handwriting talents. In order to eliminate the possible effects of these extraneous factors on the evaluators' judgments, the . . . compositions were typewritten so that spelling and punctuation could be corrected. (1973: 51)

O'Hare's notion that the ability to spell and punctuate correctly has nothing to do with the ability to write well seems to be shared by many other researchers studying written composition. Mellon (1967) and Combs (1976) also corrected the spelling and punctuation of the compositions graded for quality in their studies and had them typed prior to evaluation. And although Morenberg, Daiker and Kerek (1978) did not type the student compositions produced as a result of their study, they did instruct their teacher-raters "to ignore spelling errors and poor

handwriting" (Morenberg, Daiker and Kerek, 1978: 249).

While the practice of altering student compositions prior to evaluating them may carry with it the benefit of isolating those variables that are directly being studied, it also introduces a factor of artificiality which makes the quality ratings of many researchers at least once removed from the normal evaluation of the teacher in the classroom. However, at least two recent studies (Harris, 1977, and Stewart and Grobe, 1979) demonstrate that teachers do concern themselves with quality at the pre-verbal level when evaluating compositions in a more natural setting. Harris (1977) in a study designed to uncover the evaluation patterns of high school English teachers, discovered that an "emphasis on Mechanics and Usage emerged as a dominant factor in the teachers' judgment of quality" (1977: 180). She designed a four-part study to determine the factors influencing teachers' judgments of writing quality which consisted of three methods of evaluation -- the first the customary method used by her teacher-raters in their own classrooms, the second a ranking of the twelve compositions included in the study from best to worst, and the third an evaluation of the papers according to five criteria (content, organization, diction and appropriateness of expression, sentence structure, and mechanics and usage). A questionnaire whose purpose was to uncover "the teachers' opinions and ideas regarding the evaluation of student writing" (1977: 176) was also included in the design. The questionnaire demonstrated that teachers considered content and organization to be the most important grading criteria, closely followed by mechanics and usage. A count of the marginal comments

written on the papers by the teacher-raters revealed that 66% were concerned with mechanics and usage while only 4% were concerned with content. Of the end-of-paper comments included by teachers, 23% were devoted to mechanics and usage while 29% pertained to content. Sentence structure received 12% of the marginal comments and only 7% of the end-of-paper comments. Harris concluded that "every response pattern discovered indicated that the teachers viewed sentence structure primarily in terms of mechanical correctness" (1977: 184), and that

> Although competence in mechanics and usage may be expected or taken for granted at the high school level, any student who is weak in this category, despite strengths exhibited in other areas, is likely to be at a serious disadvantage when his writing is evaluated. (1977: 185)

Another study that pertains to quality at the pre-verbal level, and one that is particularly enlightening and valuable, is the one conducted in New Brunswick by Stewart and Grobe. This study consisted of an analysis of a large sample of student compositions from Grades 5, 8 and 11 which were written by students as part of the 1977 New Brunswick Writing Assessment Programme. Prior to the analysis carried out by the researchers, the papers had been scored by teachers using a holistic method which "resulted in an overall reader reliability of over .90" (1979: 208). Evaluation was not conducted in an artificial clinical atmosphere. Teacher-evaluators involved in Stewart and Grobe's study, unlike those involved in the studies conducted by O'Hare (1973), Mellon (1967) and Combs (1976), graded the papers as the students had produced them -- complete with spelling and punctuation errors, and poor handwriting. Variables analyzed were: total number

of words, run-on sentences and comma splices per T-unit, sentence fragments per T-unit, the number of cases of unclear or faulty pronoun reference per T-unit, mean words per T-unit, mean words per clause, clauses per T-unit, and spelling errors per 100 words. Stewart and Grobe concluded that

> As predictors of quality, the length of the compositions themselves and their freedom from spelling errors are highly significant for grades five, eight and eleven, accounting for about 25% of the variance in teachers' quality ratings. (Stewart and Grobe, 1979: 214)

It would seem, then, that teachers, themselves, do include pre-verbal factors such as spelling in their judgments of writing quality. Perhaps freedom from spelling errors is the "key situation" that would correlate with quality at the pre-verbal level.

QUALITY AT THE LEVEL OF DICTION

Armstrong (1965) suggests that one index of quality in writing might be "maturity in the use of words" (18). It is reasonable to believe that those individuals with a large writing vocabulary will be able to produce writing which is of better quality than those individuals with a small writing vocabulary. Writers having a large store of words from which to choose should be more apt to use "the right word in the right place", to match word to context in a more effective way than writers with a limited store of words.

Although most of the literature reviewed here is concerned with the syntactic level of composition, a few researchers reviewed have expressed an interest in examining vocabulary as manifested in oral or

written expression. Walter Loban in The Language of Elementary School Children (1963), for example, states, "certainly vocabulary ought to be included in any examination of verbal fluency" (1963: 35). The Language of Elementary School Children is the first report of a longitudinal study begun in 1953 which follows, among others, two special groups of students, one determined by teachers' ratings and by scores on a vocabulary test administered in kindergarten to be of high ability in the use of language, and one determined to be of low ability. The longitudinal study spans thirteen years from kindergarten to grade twelve. Loban reports:

> In this research, evidence both of quantity and quality of vocabulary is available from four sources. First, we have for all subjects their position on the vocabulary test administered in the kindergarten. Second, for all subjects, there are the teachers' ratings on vocabulary, one subsection of the Teachers' Rating Scale. Third for the two subgroups we have their vocabulary classified according to frequency of use in the English language. Lastly, we have the type-token ratios for the two subgroups, indicating the diversification of their vocabulary. (1963: 35)

In order to classify the vocabulary used by the special low and high ability groups, Loban used, after slight modification, the list proposed by Thorndike and Lorge in The Teacher's Word Book of 30,000 Words (1944). Loban found that

> both high and low groups use almost the same number of words from the first 12,000 most commonly used words; then the low group shows a higher incidence of words from the 13,000 to 33,000 categories, and thereafter the high group is gaining ascendency. (1963: 39)

Loban used the type-token ratio, defined by Armstrong as "the number of different words (types) compared with the total number of words (tokens)" (1965: 21), in order to determine the diversity of word usage in the high and low groups. Of the type-token ratio Loban states:

> When the number of words in the language samples are kept equal, subjects using only a few words repetitiously receive lower scores than those using a widely varied choice of words. (1963: 39)

After applying the type-token ratio to the speech of the two ability groups from kindergarten to grade nine, Loban was able to report that

> the medians for the high group consistently exceed those for the low group in every segment compared, with the exception of kindergarten for the first segment. (On this segment the two groups are virtually identical.) Thus on a total of thirty-one 100-word segments on which a comparison could be made, the high group exceeded the low group 30 times, whereas the low group exceeded the high group only once. Obviously, the type-token evidence is clear: the high group has a substantially greater <u>diversity</u> of vocabulary. (1966: 29)

Loban concludes that

> When all four vocabulary measures are examined together . . . it is clear that the expected superiority of the high subgroup is consistent. To whatever extent vocabulary is a factor in fluency, those with language ability manifest the greater variety and exactness of vocabulary. (1963: 41)

Thus it would seem that the size and diversity of a writer's vocabulary should correlate with his ability to use language. Logically it would also seem that writing of high quality would be writing which manifested the greater amount and diversity of word usage. Evidence of this can be found in a study conducted by Nold and Freedman (1977). In an analysis of readers' responses to essays written in the argumentative mode, Nold and Freedman had six experienced teachers read and rate 88 essays written by 22 students, freshmen at Stanford University. The essays were rated holistically on a scale which ranged from 1 (worst) to 4 (best). Nold and Freedman hypothesized that one general feature that the teacher-raters would respond to would be "the richness and appropriateness of the vocabulary" (1977: 167). In order

to test this hypothesis, the investigators analyzed a vocabulary component, "defined as the percentage of finite verbs that were common verbs" (1977: 169). The common verbs considered were arbitrarily chosen by the researchers and were listed as "be, break, do, feel, follow, find, get, give, go, have, hold, keep, know, look, live, make, mean, need, put, say, see, seem, stop, take, talk, tell, think, turn, try, want, work, write, and use" (1977: 169). After applying a stepwise multiple regression to the variables under examination, Nold and Freedman were able to report that

> The vocabulary measure comes in significantly, but last, as a predictor of quality. It is associated negatively with long sentences ($r = -.22$) and long main clauses ($r = -.25$), indicating that students with weak vocabularies are likely also to be writing less complex T-units than their peers: sophistication in syntax and diction appear to develop simultaneously. (1977: 173)

Thus it would seem that the amount and diversity of word usage is a factor which affects, not only the ability to use language, but, as well, teachers' perceptions of writing quality.

QUALITY AT THE LEVEL OF SYNTAX

INTRODUCTION

That syntax plays an important role in composition in English cannot be denied. Although English employs some inflections (for possessives and plurals), it is not a highly inflected language. A great deal of the meaning of an English sentence is derived from its syntax, its structural pattern and placement of words. Skillful

writers recognize the importance of syntax and are able to use the structure of the English sentence for subtle effects that must certainly affect the quality of their writing. The "illusion of voice" (Kane and Peters, 1969), for instance, can be created by interrupting the normal flow of the sentence as it moves from subject to verb to completer. If the sentence, "A skillful writer can, I think, vary his syntax on command" is read orally, the voice naturally drops in volume with "I think" because this clause interrupts its normal pattern. The drop in volume gives "I think" less emphasis than the rest of the sentence, which is exactly what the skillful writer would want. "I think" is used as a qualifier. It is required in the sentence so that the statement being made will not appear dogmatic. But the wise writer does not want to draw attention to his qualifiers, so he places them in positions that will receive less emphasis. Also, the fact that the "volume" and perhaps the tone of the sentence is varied is likely to interest the reader, to give him a feeling for the personality behind the writing. Flexibility of syntax and the ability to vary syntax to create subtle effects must surely make a difference to the quality of writing.

Unfortunately, the kinds of effects that are created by the skillful use of syntax have not been popular subjects for research. Perhaps this is due to the subjectivity that must necessarily be a part of any analysis of creative syntactic effects. At any rate, researchers concerned with written composition have not been primarily concerned with the flexibility or variety of syntax. Most syntactic studies

such as the developmental studies of Hunt (1965, 1966, 1970); Loban (1963, 1966, 1967, 1976); and O'Donnell, Griffin, and Norris (1967); and the experimental studies of Bateman and Zidonis (1966); Mellon (1967); O'Hare (1973); Combs (1976); and Morenberg, Daiker, and Kerek (1978); have been concerned with the fluency of syntax rather than the flexibility of syntax. These studies primarily concern themselves with the length rather than the effects of syntactic units.

Since long syntactic units tend to be more complex, to include more information, than those that are short, fluency of syntax correlates with complexity of syntax, and it is syntactic complexity that has been the variable most often studied at the level of syntax.

A quantity of literature exists which examines syntactic complexity as a phenomenon of writing. Essentially, there are three sections which comprise this body of literature, and although they sometimes overlap, for the purpose of studying them and coming to some sort of understanding, it is probably best to keep them separate. The first section comprises developmental studies which examine the syntax of students at various grade levels to discover how syntactic complexity develops in children's language as they mature. The second section is concerned with experimental studies which attempt to determine if normal development in syntactic complexity can be aided given instruction in syntax. The third section comprises those studies directly concerned with syntactic complexity as it relates with writing quality.

DEVELOPMENTAL STUDIES

A number of studies have been conducted which examine the development of "syntactic maturity" in writers of various age levels. Most notable among these studies, and those of interest here, are the investigations conducted by Hunt (1965, 1966, 1970); Loban (1963, 1966, 1967, 1976); and O'Donnell, Griffin, and Norris (1967). All of these studies have been a direct result of the advent of transformational grammar, first postulated by linguists such as Noam Chomsky (1957, 1965). Tranformational grammar has provided researchers with a plausible theory which can explain syntactic development and can be tested. To oversimplify, transformational grammar postulates that structural rules are used by a speaker of a language to form "kernel sentences", defined by Chomsky in Syntactic Structures (1957) as being simple, declarative and active. Then other sentences are derived from these kernels by means of transformational rules. As a speaker becomes more proficient in the use of transformational rules, his ability to produce complicated syntax increases. Although tranformational grammarians have been primarily interested in spoken language, tranformational theory should apply, as well, to writing.

Hunt, while not the first researcher to become interested in language development, is of prime importance to the present study since his investigations have been concerned exclusively with written language. In 1965 the National Council of Teachers of English published Hunt's Grammatical Structures Written at Three Grade Levels, a comprehensive analysis of the written syntax of three groups of

eighteen students taken from grades four, eight, and twelve. Hunt lists two purposes for the study:

1. To provide, for the quantitative study of grammatical (syntactic) structures, a method of procedure which is coherent, systematic, broad, yet capable of refinement to accommodate details.
2. To search for developmental trends in the frequency of various grammatical structures written by students of average IQ in the fourth, eighth, and twelfth grades. (1965: 1)

The first purpose resulted in the T-unit and a set of five ratios which related clause length to sentence length. The second resulted in norms of syntactic complexity for grades four, eight, and twelve that have been widely quoted and often used as a point of reference in other research.

Prior to Hunt's contribution, the index of syntactic complexity used by researchers was mean sentence length. Dissatisfied with the use of sentence length as an instrument to measure syntactic complexity, since immature writers often write long sentences by overusing coordination or misusing punctuation, Hunt devised a new unit, the "minimal terminable unit" or T-unit, and a set of five ratios which relate clause length to sentence length (words per clause, clauses per T-unit, words per T-unit, T-units per sentence, and words per sentence). The T-unit, probably the single most important product of Hunt's research since it is essentially a re-definition of the sentence, is defined as "one main clause expanded at any of many different points by structures that are modifiers or complements or substitutes for words in the main clause" (1965: 141). Thus, traditional simple and complex sentences would consist of one T-unit, while compound and compound-complex sentences would consist of two or

more T-units. Since they are related, Hunt's five ratios are eminently useful to researchers. For example, the ratio of words per clause multiplied by the ratio of clauses per T-unit equals the ratio of words per T-unit. Also, the ratio of words per T-unit multiplied by the ratio of T-units per sentence equals the ratio of words per sentence. By using these ratios, the researcher can determine what aspect of syntax (the use of more clauses, of longer clauses, or of both) is contributing to syntactic complexity.

Hunt's T-unit and five ratios are relatively objective, easily-applied instruments that are more sensitive than mean sentence length in determining syntactic complexity, but are they the best instruments available to the researcher interested in studying syntactic complexity? One problem is that Hunt's instruments do not account for what Hunt himself has called "the gain in succinctness" (1965: 106) made by writers of greater syntactic complexity. Consider the following sentences:

1. Cats will come in out of the rain, but dogs will not.
2. Cats will come in out of the rain, but dogs will not come in out of the rain.

Both sentences convey the same information. Both contain two T-units. Sentence 1 contains twelve words, resulting in an average of six words per T-unit. Sentence 2 contains eighteen words resulting in an average of nine words per T-unit. On a purely quantitative basis, sentence 2 would be considered to be syntactically more complex than sentence 1. Yet both sentences are equally complex. The segment "come in out of the rain" does not have to be repeated. The reader can recognize the

element of balance that exists in the sentence; he can remember "come in out of the rain" as it has been applied to "Cats", and can fill in the ellipsis for himself. Hunt is aware of this limitation in the use of his instrument. He writes:

> A study of the present sort can measure the extent to which clauses are lengthened, but it cannot measure directly the far more impressive extent to which words are thrown away by older writers. (1966: 68)

Certainly, Bateman and Zidonis take exception to the use of Hunt's instrument when they write:

> Hunt, though using a transformational description of sentence structure, does not distinguish between well-formed and malformed sentences; his findings consequently do not seem useful for the development of a scale that would chart expected sentence formation behavior at the different grade levels. (1966: 5)

After rejecting Hunt's ratios, since they seem unable to provide a useful index for determining syntactic complexity, Bateman and Zidonis go on to develop their own instrument, the Structural Complexity Score, their notion of structural complexity being derived from transformational grammar. The Structural Complexity Score for each sentence is arrived at by counting the number of transformations which have gone in to producing the sentence. Thus a "kernel sentence" would receive a score of one. More complicated sentences would receive a score of one plus the number of transformations they have undergone. Analysis of syntactic complexity, when using the Structural Complexity Score, would become a matter of reviewing the transformational history of each sentence in the sample, computing its "score", and then determining a mean for the sample. Although the use of the Structural Complexity Score might be a way of incorporating the element of succinctness which

escaped Hunt, it would be much more difficult and much less objective for the researcher to apply Bateman and Zidonis's instrument than Hunt's T-unit and five ratios. Also, it has been demonstrated by O'Donnell, Griffin and Norris that mean T-unit length gives a "close approximation to results of the more complicated accounting of sentence-combining transformations" (O'Donnell et al, 1967: 98).* These researchers, who designed a study which included a transformational analysis of the syntax of school children from kindergarten and grades one to seven, go on to state:

> This investigation supports the finding by Hunt (1964, 1965) that when fairly extensive samples of children's language are obtained, the mean length of T-units has special claim to consideration as a simple, objective, valid indicator of development in syntactic control. (O'Donnell et al, 1967: 98-99)

It would seem that, despite its possible flaws, the set of five ratios used by Hunt remains the best instrument that can be used to detect syntactic complexity.** In the words of O'Donnell

> It may turn out that in spite of lack of precision, T-unit length is still the most useful and usable index of syntactic development over a wide age range and that mean clause length is the best single measure of syntactic complexity at the high school level and beyond. (1976: 38)

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*Hunt himself has shown that the number of tranformations which reduce a main clause to an element that is something less than a clause closely approximates the number of words per clause. He states:

> a correlation was run between those two scores . . . . The correlation turned out to be .87, a very high score considering that 1.0 is perfect and a score as low as .15 would still be significant at the .01 level. (1970: 27)

**Golub (1974) has developed a Syntactic Density Score (SDS) based on ten factors; words per T-unit; subordinate clauses per T-unit; mean

Thus it would be safe to state that the first purpose listed by Hunt in Grammatical Structures Written at Three Grade Levels, to provide a worthwhile method of procedure for the quantitative study of syntax, has been fulfilled.

Hunt's second purpose, to provide norms of syntactic development for students of average IQ in grades four, eight, and twelve, has also met with success. His first study examined thousand word samples of the writing of students of average IQ (90 - 110 on the Short Form of the California Mental Maturity Test) from grades four, eight, and twelve as well as thousand word samples of eighteen "superior adults", writers published in Harper's and Atlantic. The writing examined at each grade level was "characteristic of its own grade uninfluenced by

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main clause word length; number of modals; number of be and have forms in the auxiliary; number of prepositional phrases; number of possessive nouns and pronouns; number of adverbs of time; and number of gerunds, participles, and absolute phrases. On the surface, it would appear that the use of the SDS would allow for a more comprehensive syntactic analysis than would the use of Hunt's five ratios. However, Belanger (1978) has found a mathematical anomaly in the SDS which is caused by the "averaging of weighted and unweighted numbers" (151). Even after offering a solution which would remove the anomaly in the SDS, Belanger states

> it is not clear that . . . modifications to the SDS actually result in a valid measure of syntactic maturity, since over 60 percent of the SDS is determined by two key factors, T-unit length and the number of prepositional phrases (1978: 153).

Similarily, O'Donnell (1976) has criticized the SDS because "the items included . . . have a high degree of redundancy in what they measure" (37). O'Donnell suggests that this redundancy "results in a high correlation between syntactic density scores and words per T-unit" (1976: 37), a measure that is much more easily applied.

the subjects being used four years or eight years earlier or later" (1965: 3). Teachers of the students who were subjects of the study were instructed to allow the writing produced by each student to be "whatever he normally writes about in school" (1965: 3). Thus, in this first study, no attempt was made by Hunt to control for subject matter or mode of discourse.

Although the sample size of the study was quite small (consisting of the writing of nine boys and nine girls from each grade level), Hunt's results were both interesting and significant. He found that both mean T-unit length and mean clause length increased significantly from grade four to grade eight, and from grade eight to grade twelve ($p < .01$). The increase in clauses per T-unit was also significant. As they mature chronologically students increase the length of their T-units both by adding clauses to them and by lengthening clauses. Hunt's grade four subjects wrote clauses with an average length of 6.6 words and wrote an average of 1.30 clauses per T-unit, making for an average T-unit length of 8.6 words. His grade eight subjects wrote clauses with an average length of 8.1 words and wrote an average of 1.42 clauses per T-unit, making for a mean T-unit length of 11.5 words. And Hunt's grade twelve subjects wrote clauses with an average length of 8.6 words and wrote an average of 1.68 clauses per T-unit, thus producing T-units whose mean length was 14.4 words. Interestingly enough, Hunt found that this trend to increase the length of syntactic units continues after grade twelve, since his "superior adults" managed to write clauses with a mean length of 11.5 words and an average of 1.78 clauses per T-unit to produce T-units whose average length was

20.3 words, significantly longer than the clauses and T-units of twelfth graders. (See Table 1.)

After examining the differences in length of clauses and T-units, Hunt went on to attempt to determine what aspects of language use were causing the increases. He found that

> the chief factor which lengthens clauses appears to be the increasing of nonclause modifiers of nouns and the nominalization of clauses. This factor and the increase in adjective clauses account in the main for the increased length of T-units. (1965: 143)

It is mainly by adding adjective clauses that the ratio of clauses to T-units is increased and by increasing the complexity of nominals (structures consisting of nouns plus their modifiers) that most of the increase in clause length is produced as students mature chronologically.

Hunt was not satisfied, however, merely to discover the effect of chronological maturity on syntactic complexity. In 1966 he published a report which included expanded data, data used in order to examine the effect of mental maturity on syntactic complexity in writing. The expanded data consisted of thousand word samples of two groups of students of superior IQ (130+ on the Short Form of the California Mental Maturity Test), one from grade four, the other from grade twelve. Both groups consisted of nine girls and nine boys. Hunt found that mean T-unit lenth is "a significant index for separating students of average and superior IQ in the fourth grade" (1966: 34). The ratio of clause to T-units is the most significant index for this purpose, but mean clause length is not a significant index for dividing

Table 1

Hunt's Findings: Five Syntactic Measures for Average and Superior IQ Groups and Grade, and for Superior Adults (1965, 1966)* N=18

Grade	Average IQ Group					Superior IQ Group				
	Words / Clauses	Clauses / T-Units	Words / T-Units	T-Units / Sentences	Words / Sentences	Words / Clauses	Clauses / T-Units	Words / T-Units	T-Units / Sentences	Words / Sentences
4	6.6	1.30	8.6	1.60	13.5	6.8	1.35	9.3	1.18	10.9
8	8.1	1.42	11.5	1.37	15.9	-	-	-	-	-
12	8.6	1.68	14.4	1.17	16.9	10.4	1.54	16.2	1.15	18.6
Superior Adults	-	-	-	-	-	11.5	1.78	20.3	1.23	24.7

*Figures for the average IQ group and for superior adults are taken from Hunt, 1965. Figures for superior grade four and twelve groups are taken from Hunt, 1966.

"average" from "superior" students in the fourth grade. (See Table 1 for numerical figures.) Delving more deeply into the samples, Hunt was able to conclude:

> Among the three kinds of subordinate clauses frequently used, only one provides a highly significant index of both chronological and mental maturity from grade 4 to maturity. Those are adjective clauses. (1966: 64)

According to Hunt, students of superior IQ in grade four write more clauses per T-unit than those of average IQ because they write more adjective clauses.

At the level of grade twelve, Hunt found that "T-unit length is still a significant index of mental maturity" (1966: 42) but that "the most significant index of superiority at this upper level is apparently clause length" (1966: 42), which showed no significant difference between IQ groups in the fourth grade. Students of superior IQ in grade twelve actually wrote fewer subordinate clauses per T-unit than did students of average IQ. (All numerical figures are given in Table 1.) Concerning the relationship between clause number and clause length Hunt was able to state:

> It is not . . . the length of clauses that the nature of language sets a ceiling on, but instead the number of subordinate clauses. The ceiling for subordinate clauses is, of course, a rubber ceiling, but it is approached or reached by most students relatively early in their school career -- at least by the twelfth grade. To develop beyond the level of the average twelfth grader, it is the other skill that must be learned, the skill of consolidating structures into longer and longer clauses. (1966: 24)

Concerning the validity and usefulness of his instrument, he was able to state that "the measures employed are significantly sensitive to detect mental maturity as well as chronological" (1966: 79).

Hunt conducted a final study, the report of which, Syntactic Maturity in Schoolchildren and Adults, was published in 1970. It consisted of an analysis of writing produced in re-writing O'Donnell's "Aluminum" passage, a selection which consisted of 32 extremely short sentences (they averaged slightly more than four words), each a single clause. Fifty students from each of grades 4, 6, 8, 10, and 12 "who would represent something close to a normal distribution of academic ability" (1970: 12) as well as 25 "average" adults (Tallahassee firemen) and 25 "skilled" adults (writers published in Harper's or Atlantic) re-wrote the passage. The fifty students from each grade were separated into thirds as to ability level and placed into a low, middle, or high group. Results from the California Achievement Test for grades 4 and 6, the California Test of Mental Maturity for grades 8 and 10, and the Florida Twelfth Grade Test for grade 12 were used as a basis for the separation.

The analysis itself consisted of two parts, first an examination of Hunt's five syntactic measures and second, a transformational analysis which "studied whatever syntactic changes were made to each one of the 32 input sentences as it passed through the mind of each writer" (1970: 23). In re-writing the 32 input sentences, three options were open to the writer. He could retain an input sentence as a main clause; he could reduce it to a subordinate clause, or he could reduce it to something less than a clause (by coordinating predicates or reducing input sentences to less than a predicate).

The first phase of the analysis supported Hunt's findings of 1965 and 1966. (See Table 2.) The length of syntactic units increased

Table 2

Hunt's Findings: Five Syntactic Measures for Grade and Ability (1970)
N=50 (Grades 4, 6, 8, 10 and 12), N=25 (Average and Skilled Adults).

Syntactic Measure	Grade and Ability											
	Grade Four		Grade Six		Grade Eight		Grade Ten		Grade Twelve		Adults	
	High Ability	Low Ability	High Ability	Low Ability	High Ability	Low Ability	High Ability	Low Ability	High Ability	Low Ability	Average	Skilled
Words / Clauses	5.33	5.04	6.05	5.31	7.30	6.09	7.81	6.87	8.39	7.42	8.40	9.95
Clauses / T-Units	1.085	1.039	1.237	1.074	1.601	1.230	1.458	1.387	1.481	1.362	1.47	1.51
Words / T-Units	5.81	5.23	7.47	5.73	11.66	7.55	11.66	9.61	12.30	10.17	11.85	14.78
T-Units / Sentences	1.512	1.782	1.132	1.647	1.083	1.410	1.105	1.215	1.035	1.148	1.06	1.05
Words / Sentences	8.59	9.37	8.42	8.99	12.45	10.37	12.44	11.42	12.66	11.66	12.51	15.22

with both chronological and mental maturity. In particular

> of the five syntactic measures . . . clause length is the one most closely related to chronological age and mental age. It is sensitive enough to show a significant difference in a 2-year interval and also between the high third and low third within a grade. (1970: 21)

The second phase of the analysis demonstrated that

> certain changes are relatively unimportant: the changes in subordinate clauses and coordinated predicates. The changes that are clearly important are the decrease in main clauses and the correspondent increase in reduction to less than a predicate. (1970: 28)

A variety of ways of reducing input sentences are possible. For example a predicate adjective could become a prenominal adjective or a predicate noun could become an appositive. Finite verb phrases could become verbals or verbal phrases. As writers mature, they "reduce more inputs to less than a predicate, [and] they use a wider variety of transformations in doing so" (1970: 53).

Because content was "maximally controlled" in this final study since "all writers were constrained to say the same thing" (1970: 54), Hunt was able to draw conclusions concerning the relationship of subject matter to syntactic maturity. He states

> the older writers showed the same syntactic superiority they showed in free writing, suggesting that their sentences are affected by their syntactic ability, not just by what they have to say. (1970: 54)*

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*Syntactic complexity may, however, depend to a large extent upon what the writer has to say, or at least upon the topic he has chosen to talk about, the audience he has chosen to talk to, and the mode of discourse he has chosen to talk in. Crowhurst and Piche (1979) have examined the effect of audience and mode of discourse on the syntactic complexity of writers from grades 6 and 10. They found that "at both

Hunt's three studies form a watershed in the research into syntactic complexity. His five syntactic measures constitute a relatively objective easily-applied instrument that can be used to detect syntactic complexity in the writing of subjects of various chronological and mental maturities. The quantitative indices his studies have produced supply fairly valid and reliable norms of syntactic complexity at various age and ability levels.

Of secondary importance to the present study, but important nonetheless, is the longitudinal study of language development begun in 1953 by Walter Loban. This study has resulted in four publications (Loban, 1963, 1966, 1967, and 1976), the last of which is of particular interest since it reports on the entire longitudinal study. Loban's findings, resulting from an examination of the syntactic complexity of the speech and writing of school-aged children, support and lend additional reliability to those of Hunt.

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grade levels, argument was more syntactically complex than narration and description" (1979: 107), and that, of the two audience categories (best friend and teacher), "compositions for teacher were more syntactically complex than those for best friend" (1979: 104). Another study, conducted by Witte and Davis (1980) examined the stability of syntactic complexity as an individual trait and across discourse modes and discovered that mean T-unit length seems to be both an unstable individual trait and unstable across the two discourse modes of narration and description.

Mode of discourse itself, however, is seldom stable, especially in compositions of high quality. The good writer is likely to mix discourse modes and use a narrative incident or descriptive detail, for example, to illustrate what is essentially an expository essay.

It is important to note that Loban segmented his language samples in much the same way as did Hunt. Loban called his syntactic unit a "communication unit" and defined it as "the grammatical independent clause with any of its modifiers" (1963: 7). In essence, the T-unit and the communication unit are one and the same.

Loban lists as the purpose of his longitudinal study to find answers to the following questions:

1. What are the differences between pupils who rank high in proficiency with language and those who rank low? What is typical proficiency for subjects at each grade level?
2. Does growth in children's language follow a predictable sequence?
3. Can definite stages of language development be identified?
4. Can the velocity and relative yearly growth in language ability be ascertained and predicted precisely? (1976: 2)

It is the first question that is the most important for the present purpose since it deals with language ability.

In the first year of the study, Loban's sample consisted of 338 kindergarten pupils. By the time most of these students had reached grade twelve, the study was able to retain 211 of the original subjects. So that "a true cross section of the larger population" (1976: 2) would be selected as subjects for the study, "four characteristics . . . -- sex, ethnic background, socioeconomic status, and spread of intellectual ability (1976: 2) governed the choice of the original subjects. Three subgroups of the 211 subjects retained in the study were selected for analysis. These consisted of "a group <u>high</u> in language ability, a group <u>low</u> in language ability, and a <u>random</u> group of subjects used to represent the total group" (1976: 3). Each of these

special subgroups was made up of 35 subjects, "selected on the basis of a thirteen-year cumulative average of teachers' ratings" (1976: 3).

Recorded samples of the speech of the subjects from kindergarten to grade twelve and of the "typical" writing of the subjects from grade three to grade twelve were analyzed. For the purpose of the present study it is Loban's analysis of written language from grade three to grade twelve that is of interest. This analysis consisted first of a determination of the mean length of communication units in the sample, and of an examination of the use of dependent clauses. Second, a determination of the elaboration of communication units was made, thirty units being studied from the writing of each subject each year for this purpose. Loban defines the "elaboration of language . . . as the use of various strategies of syntax through which the communication unit is expanded beyond a simple subject and predicate" (1976: 15). A transformational analysis of selected samples was also undertaken by Loban.

It is of importance that, for all grades, the main communication unit length of the high group exceeded the mean communication unit lengths of both the low and random groups. (See Table 3.) Also, except for the random group in grade 7, all groups in grade 9, and the high and random groups in grade 11, all groups managed to increase the mean length of their communciation units from year to year. Such findings obviously support Hunt's statement that mean T-unit length is able to detect differences in chronological and mental maturity. In addition, Loban discovered that

TABLE 3

Loban's Findings: Average Number of Words per Communication Unit in Written Language for Grade and Ability (1976)

Grade	Ability		
	High Group	Random Group	Low Group
3	7.68	7.60	5.65
4	8.83	8.02	6.01
5	9.52	8.76	6.29
6	10.23	9.04	6.91
7	10.83	8.94	7.52
8	11.24	10.37	9.49
9	11.09	10.05	8.78
10	12.59	11.79	11.03
11	11.82	10.69	11.21
12	14.06	13.27	11.24

> In the written use of dependent clauses, the Random and Low groups catch up with the High group in grades 10, 11, and 12, but this phenomenon results from the fact that the high group has moved to a more sophisticated strategy of replacing cumbersome dependent clauses with more efficient subordination (infinitive phrases and clauses, participle and gerund phrases, appositives, as well as noun, verb and adjective clusters used in cumulative sentences). (1976: 73)

On the weighted index of elaboration (weights range from half a point for an adjective to five points for a first-order participial phrase), weights attributed to the communication units of the high group exceeded those attributed to the random and low groups at all grade levels. Also, Loban's transformational analysis (N = 6) demonstrated that the subjects high in language ability used more transformations than did those from the random or low groups.

It is important to note that there is a high correlation between average number of words per communication unit and the weighted index of elaboration. In the words of O'Donnell, "In almost every instance, the simpler measure shows exactly the same developmental pattern and the same differentiation among ability groups as the complex measure" (1977: 51). Loban himself states:

> Almost without exception, a high average number of words per unit is accompanied by a high teacher's rating on language skill, by a more effective use of phrases and clauses, and by the increased use of other forms of elaboration contributing to clear and meaningful communciation.
>
> For this reason the average number of words per communication unit has proved to be one of the most crucial measures of fluency developed during the course of the investigation. (1976: 25-26)

The conclusion that mean T-unit (or communication unit) length is an important measure of syntactic complexity that can differentiate between groups of varying chronological and mental maturity seems inescapable.

A final developmental study of interest here, and one that uses a transformational analysis of syntax to a far greater degree than any of those previously reviewed, is Syntax of Kindergarten and Elementary School Children: A Transformational Analysis by O'Donnell, Griffin, and Norris (1967). This study examines the speech of students from kindergarten and grades 1, 2, 3, 5, and 7 and the writing of students from grades 3, 5, and 7. Each level is represented by thirty subjects; roughly the same number of boys and girls constituted each group. The language samples which were analyzed were produced as responses to animated films shown with the sound turned off. The analysis itself consisted, in the main, of a determination of mean T-unit length and of mean number of sentence-combining transformations per T-unit.

The results of the analysis again support Hunt. The mean number of words per T-unit in the writing of the subjects from grade three was 7.67, grade five, 9.34 and grade seven, 9.99. Subjects from grade three used an average of .92 sentence-combining transformations per T-unit, while those from grade five used 1.41, and those from grade seven used 1.61. Of the three kinds of sentence-combining transformations studied, those requiring deletions, those requiring substitutions, or those requiring expansions (1967: 16), those requiring deletions were seen by the researchers to be late acquisitions. They state:

> Theoretically, it seems reasonable to suppose that noun modification by the participle or participle phrase, the gerund phrase, the adverbial infinitive, the sentence adverbial, the coordinated predicate and the transformation-produced nominal functioning as object of a preposition would be mastered relatively late. Transformational grammar derives them all by application of deletion rules, and some of them indirectly from their sources by

> way of strings that could more directly yield subordinate clauses. Thus, The man wearing a coat . . . may be more difficult than The man who was wearing a coat . . ., and A bird in the tree . . . more difficult than A bird that was in the tree . . . (1967: 92)

The use of elements which increase the length of clauses is, perhaps, mastered at a later phase of language development than the use of dependent clauses.

All of the developmental studies seem to point to the same conclusion. As children mature both chronologically and mentally, they become more and more able to construct syntactic units of increasing complexity, first by mastering the use of dependent clauses and then by becoming more and more adept at using elements of syntax that increase the length of clauses.

EXPERIMENTAL STUDIES

If the first section within the body of literature concerned with syntactic complexity develops instruments with which syntactic complexity can be measured and attempts to discover norms of syntactic development for various grade and ability levels, the second section examines instruction in syntax and the effect of this instruction upon students' ability to produce syntactically complex structures. Following are brief reviews of six selected experiments into what has come to be known as sentence combining that are of particular interest to the present study. These are the experiments conducted by Bateman and Zidonis (1966), Mellon (1967), O'Hare (1973), Combs (1976), Morenberg et al (1978), and Stewart (1978). (A synopsis of five of these six studies is provided in Table 4.)

TABLE 4

Mean Length of T-units and Results of Quality Grading for Experimental and Control Groups of Sentence-Combining Experiments

Researcher	Grade	Experimental Group		Control Group		Quality Rating
		Pretest	Posttest	Pretest	Posttest	
Mellon (1967)	7	9.98	11.25**	9.94	10.20	Favors Control Group
O'Hare (1973)	7	9.63	15.75***	9.69	9.96	Favors Experimental Group
Combs (1976)	7	9.48	11.65***	9.14	9.67	Favors Experimental Group
Morenberg et al (1978)	College	15.31	16.05**	15.00	14.95	Favors Experimental Group
Stewart (1978)	College	13.77	18.02***	14.54	15.01	Inconclusive

**Difference significant at the .01 level.

***Difference significant at the .001 level.

In 1966, Bateman and Zidonis published the report of a two-year study designed "to measure the effect that the teaching of a generative grammar has upon the writing of ninth and tenth graders" (1966: 3). More specifically the researchers wished to answer the following questions:

1. Can high school pupils learn to apply the transformational rules of a generative grammar in their writing?
2. Can their repertoire of grammatical structures be increased by a study of generative grammar?
3. To what extent will the proportion of well-formed sentences increase in pupil writing over the two year period?
4. What kinds of transformational errors will occur in pupil writing, and to what extent will such errors increase or diminish over the two-year period? (1966: 3)

The researchers chose the ninth grade class at the University School of Ohio State University as a group of subjects for the two-year study. The fifty pupils making up the ninth grade class were assigned randomly to two sections, one experimental group and one control group with twenty-five in each section. A loss of nine students over the duration of the experiment meant that the control group ended the experiment with twenty subjects while the experimental group ended with twenty-one. Two teachers from the Language Arts Area of the University School were assigned at random to teach the two classes.

Both classes studied "what would be considered the regular curriculum at the school with this exception: the experimental class studied materials specially adapted by the investigators from the area of generative grammar" (1966: 7). This experimental treatment consisted of a set of forty-six transformational rules which were learned "rather thoroughly" by the experimental class during the second year. The structural component of the grammar was studied by the experimental group during the first year. The student writings to be analyzed were

collected at approximate two week intervals during the first three months of the first year and the last three months of the second year. This means that "each pupil produced on average twelve pieces of writing to be analyzed, six initially and six finally" (1966: 8).

The researchers developed their own analytical instrument "that would objectively assess the grammatical quality of the sentences in the sample" (1966: 8). This instrument consisted of three parts:

1. the Structural Complexity Score (which identified the number of transformations which had been applied to the sentence)
2. the Proportion of Well-Formed Sentences (a ratio of sentences "both intuitively acceptable to the analysts and derivable from the rules of the grammar" (1966: 13) to total sentences)
3. the Error Change Score (which identified the occurrences of errors of five separate types, all dealing with the misuse of transformational rules).

An analysis of the sample of student writing demonstrated that the experimental group increased its average Structural Complexity Score by a greater amount than did the control group (an increase of 9.315 for the experimental group and an increase of 3.793 for the control group), but that the difference between the two increases was non-significant and could be attributed mainly to four students within the experimental group. The analysis also showed that the proportion of well-formed sentences increased by a much larger amount in the writing of the experimental group than in the writing of the control group. The experimental group increased its proportion of well-formed sentences by 31.8 percent while the control group increased its proportion 3.5

percent ($p < .01$). Also, the experimental class reduced the occurence of error in its sentences more than did the control group ($p < .01$). Bateman and Zidonis were able to state:

> The clear relationship between increase in proportion of well-formed sentences and decrease in error production substantially supports the claim that the greater change of the experimental class is attributable to its study of the grammar. (1966: 35)

Research into the teaching of traditional grammar in the schools and its transferability to the process of student writing has tended to conclude that the study of grammar does not increase the student's competence as a writer (Braddock et al, 1963). Bateman and Zidonis's study suggests that a different kind of grammar, one that attempts to examine the psychological process of sentence production, can increase the student's ability to write well-formed sentences and sentences which contain fewer errors. Also, concerning the possibility of increasing syntactic complexity through instruction, the study is suggestive, since four of the experimental subjects did manage to greatly increase the syntactic complexity of the sentences in their writing -- one by a whopping structural complexity increase of 64.741 points.

Although Bateman and Zidonis were unable to demonstrate, with any certainty, that instruction could appreciably increase the syntactic complexity of students' writing, Mellon managed to design an experiment, the report of which was published in 1967, which did show a definite increase in syntactic complexity which could be attributed to instruction. Mellon's study of seventh graders consisted of 247 students who were assigned to three groups -- an experimental

group consisting of 100 students, a control group of 100 students and a placebo group of 47 students. The experimental group "studied a transformational grammar written for the occasion by the experimenter" (1967: 58), which included sentence-combining problems. The control group studied traditional grammar, and the placebo treatment "consisted of no formalized grammar study of any kind" (1967: 56).

The writing sample, consisting of writing done on nine topics "devised by the experimenter in consultation with the teachers" (1967: 61) and represented by parallel forms, was collected during the first and last four week periods of the school year. Nine compositions were produced by each student during each testing period. The analysis was conducted on "90 T-units of prose composition secured from each subject" (1967: 60) at each testing time, and examined twelve factors related to syntactic fluency including mean length of T-units. The experimental group experienced significant growth on all twelve indices and increased its mean T-unit length from 9.98 to 11.25 words. The control group only managed to increase its mean T-unit length from 9.94 to 10.20 words, a non-significant increase. (See Table 4.)

Mellon's study also included an examination of the quality of the writing which it produced. Six junior high school teachers evaluated a "sub-sample (8%) of the total writing produced" (1967: 102), basing their judgments equally upon five factors -- ideas, organization, style, sentence structure, and vocabulary. Mellon found that

> The writing of the experimental group was inferior to that of the subjects who had studied conventional grammar, but indistinguishable from that of subjects who had studied no grammar but had received extra instruction in composition. (1967: 104)

He labelled this development "curious results indeed" (1967: 104).

Mellon's experiment demonstrated that the normal development of syntactic complexity in writing could be enhanced by instruction, but that the quality of such enhanced writing was inferior to that of "normal" writing. In 1973, the National Council of Teachers of English published Sentence Combining: Improving Student Writing without Formal Grammar Instruction, the report of a study conducted at the Florida State University High School by O'Hare. O'Hare duplicated aspects of Mellon's study, but significantly altered the treatment received by his experimental group of seventh graders. Arguing that Mellon's design had created "an insoluble problem" (1973: 12), since it cannot be determined whether the study of transformational grammar, the sentence-combining practice, or some interaction of the two resulted in the syntactic gains made by the experimental group, O'Hare devised a treatment for his own experimental group of forty-one subjects which consisted solely of sentence-combining practice. No formal grammar study formed part of O'Hare's treatment. O'Hare's control group of forty-two subjects "did not study any kind of grammar" (1973: 39), but did study a language unit which "consisted of teacher-made study sheets and exercises on vocabulary study, dictionary skills, punctuation, capitalization, and usage" (1973: 41).

The writing sample was produced by the subjects of the study "during the first two weeks in October and the last two weeks in May" (1973: 47). Five compositions on five different topics were written by each student, in class and under supervision of a teacher, during each of the two testing periods. Parallel forms of the topics

were used. O'Hare analyzed the first ten T-units from each student's compositions so that the sample consisted of "fifty T-units per student per test" (1973: 47).

The following means were generated:

1. Words per T-unit
2. Clauses per T-unit
3. Words per Clause
4. Noun Clauses per 100 T-units
5. Adverb Clauses per 100 T-units
6. Adjective Clauses per 100 T-units

(1973: 36-37)

O'Hare discovered that significant gains were made by his experimental subjects in all six areas. In fact, when compared with those of the control group, the gains made by O'Hare's experimental group were highly significant. He reports:

> Not only were the experimental group's mean post-treatment scores significantly greater than those of the control group, they were also distinctly greater than the norms reported by Hunt for eighth graders and at least similar to, and on four occasions superior to, Hunt's norms for twelfth graders. (1973: 57)

After further analysis, O'Hare was able to state that the effect of the treatment "could not be related to the influence of a particular teacher or to whether a student was male or female" (1973: 66) and that both students of high and low IQ showed "significant increases in syntactic maturity" (1973: 66), although students with high IQ showed greater gains.

O'Hare's study, as did Mellon's, included an examination of writing quality, but unlike Mellon's results, the results of the quality evaluation in O'Hare's study proved to be highly significant and conclusive. O'Hare paired thirty of the experimental group's compositions with thirty from the control group (paired by sex and IQ)

and had eight experienced English teachers choose the better composition from each pair according to their impression of its "overall quality". Criteria which were to be considered equally by the teachers when making their decisions were ideas, organization, style, vocabulary, and sentence structure -- the same factors used by the evaluators involved in Mellon's study. The results of the quality evaluation demonstrated that

> The experimental group wrote compositions that were judged to be significantly better, at the .001 level, in overall quality than those written by the control group. (1973: 66)

Another study, similar to those conducted by Mellon and O'Hare, has been carried out by Combs (1976). The experimental design used by Combs was an expansion of those used by Mellon and O'Hare, however, since it included a delayed posttest as well as the more usual pre- and posttest observations. Also, since Combs could not randomly assign his seventh grade subjects to experimental and control groups, his seven teacher-raters twice evaluated the matched pairs (balanced for sex and ability) which were used "to assess the effect of sentence-combining practice on judgments of writing quality" (1976: 141) -- once at pretest and once at posttest. Comb's findings suppported those of O'Hare. His experimental group significantly increased its mean length of T-units and clauses. (See Table 4.) Moreover, the seven teacher-raters did not see any difference between the writing quality of the experimental group and control group prior to treatment, but did judge "the compositions of the experimental group significantly better as a result of the sentence-combining treatment" (Combs, 1976: 145). It is interesting to note that the delayed posttest (delayed eight weeks

after treatment) resulted in a reduction of T-unit and clause length in the writing of the experimental group, but that this reduction "did not appear to affect raters' judgments of quality of writing significantly" (Combs, 1977: 321).

Yet another study of the effects of sentence-combining practice has been conducted by Morenberg, Daiker, and Kerek of Miami University (1978). These researchers used a pretest-posttest design to evaluate the effect of sentence-combining practice on college freshmen, and found that the experimental group of their study made significant gains in both mean T-unit and mean clause length. More importantly, Morenberg et al expanded the examination of writing quality within their study far beyond the forced choice between matched pairs that was used by O'Hare and Combs. Three different methods were used to assess the quality of student compositions by the twenty-eight teacher-raters involved in this study -- a forced choice method, a holistic method, and an analytic method. Rating criteria which were considered by the teacher-raters when applying all of the three methods were ideas, supporting details, organization and coherence, voice, sentence structure, and diction and usage. The results of all three methods of evaluation demonstrated that the experimental group produced writing which was significantly superior to that produced by the control group. The results of the analytic method of rating were, perhaps, the most enlightening. Evaluators rated the writing of the experimental group to be superior on five of the six criteria -- all except organization and coherence. The most highly significant difference between experimental and control groups occurred in an analysis of the criterion

labelled "voice" -- enumerated as the "extent to which the essay speaks with individuality and distinctiveness of tone" (Morenberg et al, 1978: 249).

All of the studies reviewed above have been conducted in the United States. In 1978, Stewart published an article, "Freshman Sentence Combining: A Canadian Project" which reported on a study designed "to test whether the use of . . . sentence-combining practice material . . . would increase the normal syntactic development and influence the writing quality of first-year university Education students" (1978: 258). Students were randomly assigned to experimental and control groups. The experimental treatment consisted of material from Strong's Sentence Combining: A Composing Book (1973) and material adapted from Christensen which dealt with "the expansion of sentences by the addition and insertion of different types of 'free' modifiers" (1978: 260). In addition, the experimental subjects practiced the use of subordinate clauses, but "as far as theory and terminology were concerned, all the lessons were practically 'grammar-free'" (1978: 260). The control group studied a traditional composition unit which "concentrated on expository writing -- selecting topics; gathering data; writing thesis statements; outlining, drafting, discussing, and revising short reports" (1978: 260-261).

The writing sample, consisting of both free and controlled writing, was collected at pre- and posttest periods and was analyzed to determine mean length of T-units and clauses. The increases made by the experimental group on both means for both types of writing were significant at the .001 level when compared to the increases made by

the control group. (See Table 4.) These results are especially impressive since the treatment time was only six weeks.

The study included an examination of the quality of free writing produced by experimental and control groups. Stewart states:

> The assessment of writing quality was done holistically by a team consisting of two heads of English departments who had previously acted as readers in a 1977 province-wide New Brunswick high school writing assessment program and supervised by the English Education professor who had served as chief reader and coordinator of the same program. (1978: 261)

The results of the quality examination, however, did not demonstrate that any significant differences existed in the quality of writing produced by the two groups.

The experimental studies demonstrate that the syntactic complexity of student writing can be significantly increased beyond its normal development by instruction and practice, especially instruction and practice in sentence combining. They also suggest that instruction and practice in sentence combining may result in writing which is judged, by experienced teachers, to be superior to writing which is produced after more traditional instruction and practice. What the experimental studies in no way demonstrate, however, is that it is the difference in syntactic complexity that influences evaluators' judgments. A relationship between syntactic complexity and writing quality, as perceived by teachers, may or may not exist.

SYNTACTIC COMPLEXITY AND WRITING QUALITY

Developmental researchers examining syntactic complexity and its relationship to chronological and mental maturity never really

suggest that a positive relationship between syntactic complexity and writing quality exists. Hunt, for instance, is careful to dissociate syntactic maturity from writing quality when he states, "It has nothing to do with whether older students write 'better' in any general stylistic sense" (1965: 5). Nonetheless, the findings of both Hunt and Loban, which do relate syntactic complexity with intelligence and language ability, suggest, by implication, that such a relationship may exist.

Experimental researchers carry this implication several steps further. In Sentence Combining: Improving Student Writing without Formal Grammar Instruction (1973), for instance, O'Hare poses two interesting questions:

1. At approximately what point would an experienced grader recognize that there were syntactic differences in the students' writing?
2. Would these syntactic differences influence the grader's evaluation of the students' writing? (1973: 15)

Unfortunately, O'Hare has left both of these questions unanswered. Although his experimental group did write compositions which were more syntactically complex than those of his control group, and although the compositions produced by his experimental group were judged to be superior to those produced by his control group, there is no way of knowing if it was the difference in syntactic complexity that influenced the evaluators involved in O'Hare's study. Perhaps these evaluators were influenced by the difference in syntactic complexity, but perhaps they were influenced by factors other than, or as well as, the complexity of syntax, as the study conducted by Morenberg, Daiker, and Kerek (1978) would suggest. (See pages 50-51.)

Fortunately, a number of studies which, in fact, examine the relationship between syntactic complexity and writing quality do exist. Conflicting findings concerning this relationship have been reported by two researchers working in the mid 1960's. In 1967, Potter conducted a preliminary examination of the relationship between syntactic complexity and writing quality and determined that measurable differences could be found between the syntax of "good" and "poor" writing. After correcting a sample of tenth grade writing for "gross mechanical errors", and having the compositions typed, Potter had four raters separate the sample into three categories -- good, average, and poor. He found that the mean T-unit length of the "good" compositions was 16.0 words while the mean T-unit length of the "poor" compositions was 14.2 words.

In 1968, Martin conducted a study which examined samples of "good" and "poor" writing, also from the tenth grade. Martin determined that the mean length of T-units in his "poor" sample was non-significantly greater than the mean length of T-units in his "good" sample. Martin's "poor" sample averaged 12.7 words per T-unit while his "good" sample averaged 12.3 words per T-unit. It is interesting to note that although Martin's sample was typed prior to evaluation by three raters, no corrections were made.

More recently, Harris (1977), Nold and Freedman (1977), Gebhard (1978), Stewart and Grobe (1979), and Crowhurst (1980) have also examined the relationship between syntactic complexity and writing quality. In general, these studies point to the conclusion that this relationship may be tenuous at best.

In a study which examined the written comments that teachers place on student papers during evaluation, Harris (1977) noted that comments regarding sentence structure were relatively infrequent, far outweighed by those concerned with mechanics and usage. (See pages 14-15.) Harris concluded that criteria other than sentence structure "contributed more to the basis for the teachers' judgement" (1977: 184)

Another study which demonstrates that syntactic complexity is not a major concern of teachers when evaluating student writing has been conducted by Nold and Freedman of Stanford University. (See pages 18-19.) This study demonstrates that mean length of T-units or clauses is "not useful in predicting perceptions of quality on the college level" (1977: 174). Nold and Freedman found that the length of the composition and the percentage of words present in final free modifiers are the two variables most useful in predicting quality. The fact that final free modification is an important predictor of quality lends support to the conjectures of Christensen (1967, 1968) who stated that the number of words found in free modifiers "seems to be the mark of the skillful writer" (1968: 577).*

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*A further support of Christensen's conjectures comes from an experimental study conducted by Faigley (1979). Faigley used exercises from Christensen's A New Rhetoric as treatment for his experimental group. He found that the writing produced by his experimental group was determined by writing teachers to be superior to that produced by his control group. Also, the percentage of T-units with final free modification (cumulative sentences) accounted for 16% of the variance in quality scores.

Gebhard is another researcher who has discovered that mean T-unit length is not useful in distinguishing writing quality. She conducted an analysis of three prose samples -- those drawn from two quality-rated freshman groups ("poor" and "good") and one drawn from "quality magazine articles". Although the quality ratings obtained by Gebhard, conducted by "two experienced college composition teachers" (1978: 212) and "two doctoral candidates in English education" (1978: 212), were, like those of Mellon, O'Hare, and Combs, somewhat artificial since the compositions they were based on were typed and corrected for spelling and for mechanical errors, her results are interesting. The freshman papers judged "good" were 60% longer than those judged "poor", and contained significantly longer clauses ($p < .05$) and non-significantly longer T-units. Gebhard concluded:

> mean T-unit length, an established index of writing maturity, did not significantly distinguish the two quality-rated freshman groups. It would appear that length of clause, reflecting skill in consolidating elements within larger structures, is a better indicator of quality than length of T-unit. (1978: 215)

Gebhard also discovered that the difference, between the two freshman groups, in mean number of words per sentence-combining transformation was significant ($p < .001$) with freshmen judged to be good writers using a transformation every 4.30 words and those judged poor using one every 4.79 words. One aspect of syntax that Gebhard found to differentiate between the two freshman groups and the professional writers was "the proportion of sentences containing loose modification" (1978: 227). This difference was found to be significant at the .001 level with professionals writing 44.1% of their sentences with no loose modification, "poor" freshmen writing 57% and "good" freshmen writing 60.3% of

their sentences without loose modification.

Stewart and Grobe (1979) conducted a study which analyzed quality-rated papers produced by students in grades 5, 8, and 11. (See pages 15-16.) Three "syntactic maturity variables" were chosen for analysis -- words per T-unit, words per clause, and clauses per T-unit. Stewart and Grobe were able to conclude that

> In grade five, the syntactic maturity variables explain about 10% of quality variance; in grades eight and eleven their contribution towards an explanation of variance is minimal or non-existent. (1979: 214)

In 1980, Crowhurst published the report of a study whose purpose was "to examine the relationship between syntactic complexity and the quality ratings assigned to compositions in two different modes of discourse (narration and argument) at three grade levels (6, 10, and 12)" (1980: 224). Crowhurst separated compositions from each grade level into those of high syntactic complexity (.5 words per T-unit above the mean) and those of low syntactic complexity (.5 words per T-unit below the mean), and then paired compositions written in the same mode by the same student and of similar length. The difference in syntactic complexity between the two compositions in any pair was held to a minimum of two words per T-unit. After typing the compositions "with correction of spelling errors and gross punctuation errors such as omission of periods" (1980: 226), Crowhurst gave them to "experienced teachers, four from each grade level" (1980: 226) to rate holistically. The study found that

> in narration, high syntactic complexity was not associated with higher quality-ratings at any of the three grade levels. In argument high syntactic complexity was associated with higher quality-ratings at Grades 10 and 12 but not at Grade 6. (1980: 230)

The results of the studies examining the relationship between syntactic complexity and writing quality are, thus, somewhat inconclusive, but do, in the main, tend to question the importance of this relationship. The ability to produce quality writing, it would seem, must consist of something more than the ability to produce syntactically complex structures. Other aspects of writing must also be important to quality. Although the ability to manipulate syntax "may produce skilled professional writing, that same ability may produce bureaucratic excesses, jargon and gobbledygook" (Maimon and Nodine, 1978: 243).

QUALITY AT THE LEVEL OF RHETORIC

Braddock et al make the statement that "almost nothing has been proved in a scientific sense about the rhetorical aspects of written composition" (1963: 38). By "rhetorical aspects", Braddock et al mean:

> those aspects of writing which . . . are larger than the unit of the sentence -- in expository writing, for instance, the main idea and its analysis; the support of subordinate ideas with details, examples, statistics, and reasons; and the organization of the previous into an orderly and meaningful whole (1963: 38).

Thus, two aspects of writing which can be considered to exist at the level of rhetoric are the twin factors traditionally known by English teachers as unity and coherence.

If unity and coherence are twin factors of writing, they are certainly Siamese twins -- difficult to separate. However, differences in the two factors can be suggested. For a composition to display unity it must "be all of one piece" (Martin, 1968: 61); its parts must be interrelated in such a way that the composition itself can be

considered a unit. For a composition to display coherence, the separate ideas which constitute it must connect, must be seen to flow, one into the other, in such a way that the reader is not left wondering about their relation. Unity, then, can be considered "oneness" -- all of the ideas making up the composition being concerned with a particular topic. Coherence can be considered "connection" -- each idea within a composition being connected to the idea previous to it and the one following from it so that the ideas constitute a train of thought.

Although this separation of unity and coherence may be somewhat arbitrary, it does allow for interesting speculation. For example, would it be possible to quantify unity and coherence as they are manifested in a given composition? Martin (1968) examined two variables that he considered indicative of unity in writing -- "interlocking of T-units [and] sentences implementing motif" (1968: 62). The second variable, and the one most closely allied to the concept of unity proposed by the present study, was rejected for use because it tended to be operationally unfeasible. Martin states:

> The procedure here was to make a subjective judgment, supported as far as possible by evidence from the theme, as to what the author was essentially trying to do in his paper, what his main point was, etc. In some cases, a clear 'thematic' approach could easily be identified. In these cases, each sentence was weighed against the theme or treatment or motif to see whether it demonstrably contributed to, or was congruent with, the motif. The variable was abandoned when, in the total sample, too many doubtful decisions had to be made. (1968: 110)*

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*This same difficulty has been experienced by the present investigator in his preliminary analysis of the present sample. See Appendix B.

Nonetheless, the ability of a writer to remain on topic should relate to his ability to produce quality writing. Shaughnessy (1977) states that

> The ability to hold larger and larger units of discourse together (from paragraph to essay to term paper to research paper) is in fact an important measure of a student's intellectual growth, and writing can be viewed in part as a technology for holding vast and complex units of thought together. (1977: 233)

Perhaps the length of units of discourse, paragraphs and especially compositions themselves, would be some sort of crude indicator of the ability of a writer to produce discourse that is unified. Nold and Freedman (1977) in fact used such a variable in their study. (See pages 18-19.) Arguing that the length of a composition is "an approximate indicator of the number and development of the ideas expressed therein" (1977: 169), they created a "dummy variable, SHORT, and assigned the number 1 to an essay if it was one standard deviation below the mean and 0 if it was not" (1977: 169). A stepwise regression of seventeen variables which were considered possible predictors of writing quality revealed that this "dummy variable" was the first selected and that it explained 20% of the variance in quality scores. The relationship between the unity of a composition and its length is, however, at least speculative. Long essays will probably contain more ideas than short ones, and more elaboration of ideas, but ideas will not necessarily be more related in longer essays.

Although unity may be difficult to quantify, coherence can be enumerated fairly objectively. Martin's "interlocking of T-units" is essentially a variable which quantifies coherence since an "interlocking" device is interpreted as "any device in the clause which clearly implies that the passage consists of more than this particular

clause" (1968: 100). Martin gives the example of the clause which contains a pronoun whose antecedent is in another clause as being one such case.

At any rate, coherence should relate positively to writing quality. As Shaughnessy states

> the mature writer is recognized not so much by the quality of his individual sentences as by his ability to relate sentences in such a way as to create a flow of sentences, a pattern of thought, that is produced, one suspects, according to the principles of yet another kind of grammar -- a grammar, let us say, of passages. (1977: 226)

Such a "grammar of passages" would include cohesive devices such as those examined by Martin.

Several researchers have, in fact, enumerated the use of certain types of cohesive devices. Loban (1963), for instance, when examining students' spoken language, found that "the use of subordinating connectors increases with chronological age, mental ability [and] language ability" (1963: 86) but that "the high group [high in language ability] seems to be no more coherent in spoken style than a random group, whereas the low group is less coherent than the random group" (1963: 87). Loban (1976) also states:

> clauses requiring rigorous attention to relationships will appear less frequently in all language and will be employed more often by those who are skilled in expression. (1976: 57)

Christensen (1967), in examining the use of "coordinating conjunctions as links between sentences" (1967: 50-51), found that, in the professional writing he analyzed, 8.75% of the sentences in expository writing and 4.55% of the sentences in narrative writing were linked with coordinating conjunctions. He concluded that

> the accurate use of these sentence-linking conjunctions may be taken as a fairly good mark of a mature style. (1967: 51)

Gebhard (1978) also found that the use of an initial coordinating conjunction, "a device for realizing instant transition" (1978: 225), was an established practice in the professional writing analyzed in her study. Professional writers used this type of sentence opener to begin 6.4% of the sentences analyzed. Even more interestingly the use of initial coordinating conjunctions differentiated between the two quality rated freshman writing samples analyzed by Gebhard, with 1.4% of the sentences from the "poor" sample using this sentence opener and 5.7% of those from the "good" sample using it -- a difference significant at the .001 level.

It would seem that the use of cohesive devices may be a variable that will relate with writing quality at the level of rhetoric. Theoretically, writing in which the ideas being proposed are seen to be related should be perceived as being of higher quality than writing in which the ideas are seen to be without relationship. Practically, the use of cohesive devices should be relatively easy to quantify and such quantification should be fairly objective.

CHAPTER III

DESIGN AND PROCEDURES

OVERVIEW AND HYPOTHESES

The overall plan of the present study was to investigate the relationship between teachers' perceptions of writing quality and certain variables thought by the researcher to be indicative of quality in writing. The guiding concept of the present study has been the idea that written composition can be seen to contain compositional "levels" since composition itself is essentially a process of amalgamating small units to form larger and ever larger units which eventually become a whole. The compositional levels conceptualized were

1. the Pre-verbal Level, whose unit would be the phoneme
2. the Level of Diction, whose unit would be the word
3. the Level of Syntax, whose unit would be the T-unit or sentence
4. the Level of Rhetoric, whose unit would be the composition itself (the eventual whole).

The variables considered likely to correlate with teachers' perceptions of writing quality were

1. at the Pre-verbal Level, the freedom from spelling errors (Stewart and Grobe, 1979)
2. at the Level of Diction, the complexity of diction as measured by the correct use of polysyllabic words

3. at the Level of Syntax, syntactic complexity (Hunt, 1965; O'Hare, 1973; Combs, 1976) and the freedom from traditional sentence errors -- sentence fragments, fused sentences, and comma splices
4. at the Level of Rhetoric, the coherence of ideas within the composition (Shaughnessy, 1977).

Hypotheses to be tested for significance at the .05 level of confidence were

1. On the Pre-verbal Level, freedom from spelling errors will relate significantly with writing quality as perceived by teacher-raters.
2. On the Level of Diction, the use of polysyllabic words and freedom from error in the use of polysyllabic words will relate significantly with writing quality as perceived by teacher-raters.
3. (a) On the Level of Syntax, syntactic complexity as determined by Hunt's five syntactic measures will relate significantly with writing quality as perceived by teacher-raters.
   (b) At this level, the freedom from sentence errors will also relate significantly with writing quality as perceived by teacher-raters.
4. On the Level of Rhetoric, coherence of ideas as determined by the use of cohesive devices will relate significantly with writing quality as perceived by teacher-raters.

THE SAMPLE

In June of 1978, all students enrolled in either English 30 or English 33 in Alberta were eligible to write the Alberta English

Written Composition Achievement Test. In all, 12,965 students wrote the test, and their compositions were scored holistically by experienced English teachers. (See Appendix A.) After reading a composition for overall quality, a scorer awarded it a rank of 1, 2, 3 or 4 (one being low and four high). When the composition had been read and scored by a variety of teachers working independently and had received a three mark agreement, the scoring process ended, and the composition was awarded the agreed-upon score. All marking was conducted "blind". If, after five readings, the composition did not achieve three-mark agreement, it was forwarded to a head marker who established a consensus score arrived at in essense by averaging together the five marks it had received. A random sample of 1,367 compositions was drawn from the total population of 12,965 by Mr. John Wood of Alberta Education who then made this random sample available to the present investigator. The present study examined twenty-five compositions selected at random from those compositions which had received three-mark agreement in each grading category (1, 2, 3, and 4.) A total of 100 compositions were analyzed.

PROCEDURES

A pilot study which examined variables originally thought by the present investigator to be attached to the conceptual levels formed the first part of the present procedure. Variables examined and results obtained are reported in Appendix B. The pilot study analyzed roughly one quarter of the compositions present in the sample,

twenty-four in total -- six from each grading category. The one variable examined during the pilot study, but rejected for later study because it proved to be operationally unfeasible, was the repetitions and variations of thesis (or topic sentence) per sentence. During the analysis which constituted the pilot study, it became increasingly clear that counting repetitions and variations of thesis was far too subjective a procedure to be reliable. It is doubtful that this researcher could have arrived at similar counts had he gone back over the sample to enumerate repetitions and variations of thesis several times. Martin experienced the same operational difficulty with a similar variable -- "sentences implementing motif" (1968: 62). It may be that no reliable method of quantifying unity in writing exists.

The pilot study also proved useful since it allowed any procedural inconsistencies to be uncovered and dealt with. The procedural rules outlined below were adopted as a result of the pilot study, so that analytic procedures used on the main sample would remain consistent and thus reliable.

A three-phase quantitative analysis was conducted on the main writing sample. The first phase enumerated certain phenomena which existed in the sample, such as number of spelling errors and number of T-units. The second phase created a set of ratios which were used to measure the variables listed above, such as spelling errors per 100 words or words per T-unit. The third phase consisted of a statistical analysis, the purpose of which was to test the hypotheses of the study.

Analysis -- First Phase:

The first phase of the analysis created raw data which could be used in successive procedural phases of the study. Each composition which comprised the writing sample was enumerated for the following factors:

1. Words Analyzed
2. Words Rejected
3. Type 1 Spelling Errors
4. Type 2 Spelling Errors
5. Total Spelling Errors
6. Sentence Fragments
7. Comma Splices
8. Fused Sentences
9. Total Sentence Errors
10. Words of Three Syllables
11. Words of Four or More Syllables
12. Different Words of Four or More Syllables
13. Diction Errors in Words of Three Syllables
14. Spelling Errors in Words of Three Syllables
15. Total Errors in Words of Three Syllables
16. Diction Errors in Words of Four or More Syllables
17. Spelling Errors in Words of Four or More Syllables
18. Total Errors in Words of Four or More Syllables
19. Sentences
20. T-units
21. Clauses

22. Inter-Sentence Major Word Repetition
23. Inter-Sentence Pronoun-Antecedent Cohesion
24. Inter-Sentence Transitions
25. Inter-Sentence Logical Cohesion
26. Inter-Sentence Synonym Cohesion
27. Inter-Sentence Grammatical Similarity
28. Use of Coordinating Conjunction to Begin a Sentence
29. Total Cohesive Devices

All of the factors listed above are explained in some detail in Appendix C.

Analysis -- Second Phase

The second phase of the analysis consisted of calculating various ratios from the raw data which were created in the first phase of the analysis. These ratios allowed for comparisons to be made between and among compositions and grading categories. The following ratios were calculated for each composition.

1. Spelling Errors per 100 Words
2. Words of Three Syllables per 100 Words
3. Words of Four or More Syllables per 100 Words
4. Different Words of Four or More Syllables per 100 Words
5. Errors in Use of Words of Four or More Syllables per Total Number of Words of Four or More Syllables Used
6. Words per Clause
7. Clauses per T-unit
8. Words per T-unit

9. T-units per Sentence
10. Words per Sentence
11. Sentence Errors per 100 Words
12. Cohesive Devices per Sentence

All of the ratios listed above are explained in some detail in Appendix D.

Analysis -- Third Phase

The third phase of the analysis consisted of various statistical procedures the purpose of which was to allow the study's hypotheses to be tested. Numerical values for fourteen variables were keypunched onto data cards. (See Appendix F for these values.) One card was used for each composition; a total of 100 cards were keypunched and verified. The fourteen variables included the twelve ratios calculated as a result of the second phase of the present procedure. In addition, two other variables were included -- the grading category (or holistic score) of each composition (a value of 1, 2, 3, or 4) used to denote quality, and the total number of words analyzed for each composition.

Three statistical analyses were conducted using the SPSS (Statistical Package for the Social Sciences*) Batch System of the Division of Educational Research Studies at the University of Alberta's Faculty of Education and the Amdahl computer at the university's

*All computing procedures used during the present study are outlined and neatly explained in Nie et al, Statistical Package for the Social Sciences. New York, McGraw-Hill, 1975.

Department of Computing Services. The first was a series of one way analyses of variance used to test for differences among the means of the various grading categories for thirteen variables. These analyses compare two estimates of the variance experienced by a particular variable -- the first "a weighted average of the variances within each of the separate samples [and the second] the variance of the sample means treated as individual scores" (Blalock, 1960: 243). The second analysis was a computation of Pearson product-moment correlation coefficients between pairs of fourteen variables. And the third was a multiple stepwise regression analysis which used grading category (or quality) as the dependent variable and the other thirteen variables as predictors. This analysis first selected the single best predictor of the dependent variable writing quality, then the second best, in combination with the first, and continued this process until no new predictive power could be added to the prediction equation. Results of the statistical analyses are reported in the following chapter and in Appendices G and H.

CHAPTER IV

FINDINGS AND INTERPRETATIONS

The previous chapter outlined the design of the present study and described the procedures that were used to gather and analyze the data derived from a sample of compositions written by Grade 12 students who had taken the 1978 Alberta English Written Composition Achievement Test. The sample consisted of four sub-samples, each randomly selected from those compositions which had achieved three-mark agreement on four grading categories (1, 2, 3, and 4). As a guide to the present investigation, a series of five hypotheses were formulated which were, in turn, attached to the various compositional "levels" conceptualized. This chapter presents the findings of the various analyses by dealing, in turn, with these hypotheses and the "levels" to which they are attached.

QUALITY AT THE PRE-VERBAL LEVEL

The first hypothesis proposed was

> On the Pre-verbal Level, freedom from spelling errors will relate significantly with writing quality as perceived by teacher-raters.

An examination of Appendix E shows that the 25 compositions selected from the lowest grading category contained a total of 7,812 words analyzed, 92 Type 1 Spelling Errors and 255 Type 2 Spelling Errors. The compositions selected from the second grading category contained a total of 11,038 words analyzed, 42 Type 1 Spelling Errors and 158 Type

2 Spelling Errors. The compositions selected from the third grading category contained a total of 12,591 words analyzed, 30 Type 1 Spelling Errors and 66 Type 2 Spelling Errors. Finally, the compositions selected from the highest grading category contained a total of 16,020 words analyzed, 15 Type 1 Spelling Errors and 48 Type 2 Spelling Errors. Table 5 presents the means for the variable Spelling Errors per 100 Words for the various grading categories, and Figure 1 gives a graphic representation of both the means and the variances of this variable.

On the average, those compositions analyzed which had received a holistic score of 1 contained 4.23 spelling errors per 100 words; those which had received a score of 2, 1.66 spelling errors per 100 words, and those which had received a score of 3, 0.73 spelling errors per 100 words. Those compositions which had received a score of 4 contained the lowest number of spelling errors per 100 words -- 0.36. Roughly speaking then, the compositions graded the lowest contained an average of one spelling error every 25 words while those graded the highest contained a spelling error every 300 words.

A one way analysis of variance using Spelling Errors per 100 Words as the criterion variable and grading category as the independent factor (Nie et al, 1975: 400) yielded an F ratio of 31.731 which was significant beyond the .001 level. (See Table 5.) The correlation coefficient between grading category (or quality) and Spelling Errors per 100 Words was -.65, a relatively high correlation, significant beyond the .001 level. (See Appendix G.) Also, this variable was the first predictor chosen by the multiple stepwise regression analysis and alone

TABLE 5

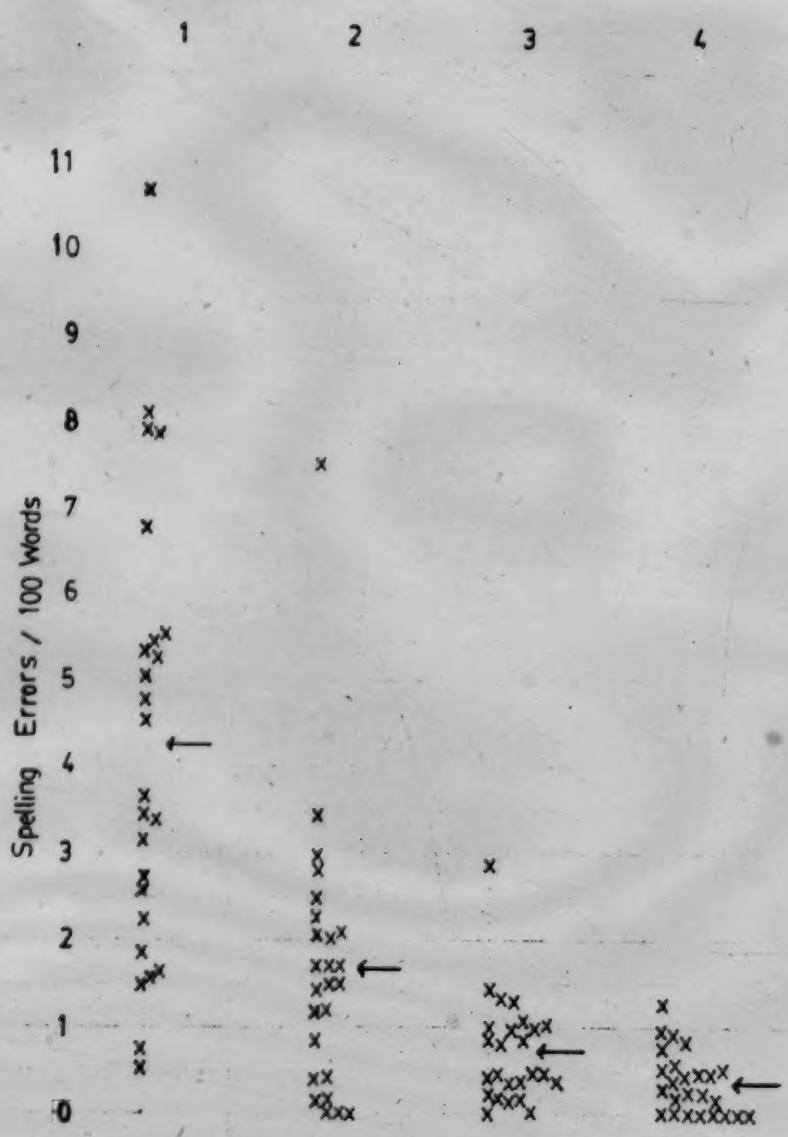
Comparison of Means of Selected Variables
by Grading Categories

Variable	Grading Category 1	2	3	4	F Ratio
Total Words	313	442	504	641	23.241***
Spelling Errors per 100 Words	4.23	1.66	0.73	0.36	31.731***
Sentence Errors per 100 Words	1.49	1.23	0.87	0.49	7.582***
Words of Three Syllables per 100 Words	4.26	5.82	6.75	7.00	9.098***
Words of Four or More Syllables per 100 Words	2.12	3.05	3.70	4.50	7.834***
Different Words of Four or More Syllables per 100 Words	1.39	1.82	2.69	3.09	13.447***
Errors in Use of Words of Four or More Syllables per Total Words of Four or More Syllables Used	0.22	0.07	0.01	0.01	9.962***
Words per Clause	8.49	9.15	9.42	9.86	3.569*
Clauses per T-unit	1.89	1.66	1.63	1.58	3.933*
Words per T-unit	16.09	15.10	15.20	15.45	0.396NS
T-units per Sentence	1.48	1.28	1.20	1.18	1.422NS
Words per Sentence	25.68	19.34	18.40	18.15	1.130NS
Cohesive Devices per Sentence	0.71	0.82	0.92	0.93	5.017**

One Way Analysis of Variance
*** significant at or beyond the .001 level
** significant at or beyond the .01 level
* significant at or beyond the .05 level
NS not significant

FIGURE 1

Mean Spelling Errors / 100 Words



Each x represents one composition.
Arrow denotes mean.

accounted for nearly 43 per cent of the variance in quality scores. (See Appendix H.)

Due to the almost overwhelming evidence that freedom from spelling errors increases as holistic score increases, the null hypothesis was rejected and the formulated hypothesis that freedom from spelling errors does relate significantly to writing quality, at least as it is perceived by teachers of English was accepted. This finding supports Stewart and Grobe (1979), who discovered that freedom from spelling errors was an important predictor of quality and that this variable was significantly correlated with writing quality.

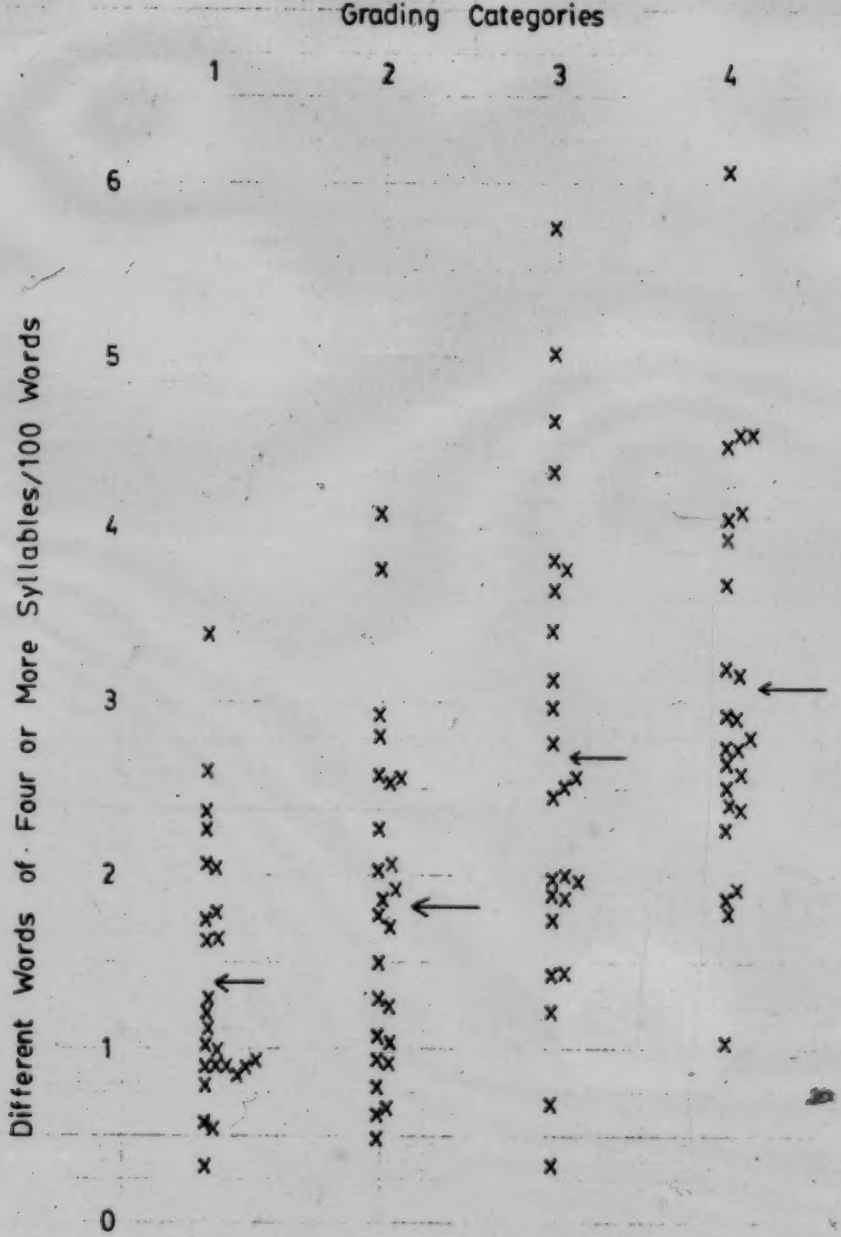
QUALITY AT THE LEVEL OF DICTION

The second hypothesis proposed was

> On the Level of Diction, the use of polysyllabic words and the freedom from error in the use of polysyllabic words will relate significantly with writing quality as perceived by teacher-raters.

Table 5 presents the various means for the four variables examined at this level -- Words of Three Syllables per 100 Words, Words of Four or More Syllables per 100 Words, Different Words of Four or More Syllables per 100 words and Errors in the Use of Words of Four or More Syllables per Total Words of Four or More Syllables Used. (Appendix E reports, in detail, quantities which went in to calculating values for these variables, and Appendix F gives actual numbers for each composition.) In addition, Figure 2 compares the means and variations of one of these variables -- Different Words of Four or More Syllables per 100 Words.

FIGURE 2
Mean Different Words of Four or More Syllables/ 100 Words



Each x represents one composition.
Arrow denotes mean.

Frequency of use of polysyllabic words increased as holistic score increased. Compositions which fell into the lowest grading category contained a word of three syllables approximately every 25 words, a word of four or more syllables every 50 words, and a different word of four or more syllables every 70 words, on the average. Compositions which were graded 2 contained a word of three syllables approximately every 20 words, a word of four or more syllables every 35 words, and a different word of four or more syllables every 55 words. Compositions which received a score of 3 contained an average of one word of three syllables for every 15 words, a word of four or more syllables for every 25 words, and a different word of four or more syllables for every 35 words. Compositions awarded a holistic score of 4 contained, on the average, a word of three syllables every 15 words, a word of four or more syllables every 20 words, and a different word of four or more syllables every 30 words.

Also, frequency of error in the use of polysyllabic words (words of four or more syllables) decreased as holistic score increased. Compositions which received a score of 1 contained an error in the use of words of four or more syllables for every five such words used. Compositions graded 2 contained an error in such usage for every 15 words of four or more syllables used, and compositions which received either a score of 3 or 4 contained an error in the use of words of four or more syllables for every 100 such words used. It is interesting to note that nearly all errors in the use of polysyllabic words were spelling errors. Compositions constituting the present sample contained very few diction errors indeed. (See Appendix E.)

F ratios resulting from one way analyses of variance using the above variables as criterion variables and grading category as factor all were significant beyond the .001 level of confidence. (See Table 5.) Correlation coefficients relating these four variables to grading category ranged from .44 to .54 indicating a moderate degree of correlation (Franzblau, 1958: 81), but all were significant beyond the .001 level. (See Appendix G.) In addition, three of the four variables entered the final prediction equation which was a result of the multiple stepwise regression analysis. Different Words of Four or More Syllables per 100 Words was the third predictor chosen by the computer, accounting for nearly seven per cent of the variance in quality scores. (See Appendix H.) As a result of the statistical analyses, the null hypothesis was rejected and the formulated hypothesis that the use of polysyllabic words and freedom from error in the use of polysyllabic words relate significantly with writing quality as perceived by teachers of English was accepted.

QUALITY AT THE LEVEL OF SYNTAX

Two hypotheses were proposed at the level of syntax:

1. On the Level of Syntax, syntactic complexity, as determined by Hunt's five syntactic measures, will relate significantly with writing quality as perceived by teacher-raters.
2. At this level, the freedom from sentence errors will also relate significantly with writing quality as perceived by teacher-raters.

These hypotheses will be dealt with in turn.

Table 5 presents the various means for Hunt's five syntactic measures. Mean words per clause, mean clauses per T-unit, and mean words per T-unit are also shown graphically in Figures 3, 4 and 5, as are the variances for these three variables. Mean words per clause increased as holistic score increased. Compositions in the lowest grading category averaged 8.49 words per clause; those in category 2 averaged 9.15 words per clause, and those in category 3 averaged 9.42 words per clause. Compositions in the highest grading category averaged the highest number of words per clause -- 9.86.*

Mean clauses per T-unit, T-units per sentence, and words per sentence all decreased as holistic score increased. Compositions which were perceived by teachers as being of lowest quality averaged 1.89 clauses per T-unit. These compositions contained 89 subordinate clauses for every 100 independent clauses. Compositions in category 2 averaged 1.66 clauses per T-unit, and those in category 3 averaged 1.63 clauses per T-unit. Those compositions which were perceived by teachers as being of highest quality averaged 1.58 clauses per T-unit. In other words, they contained 58 subordinate clauses for every 100 independent clauses -- 31 fewer subordinate clauses per 100 independent clauses than those compositions that the teacher-raters considered to

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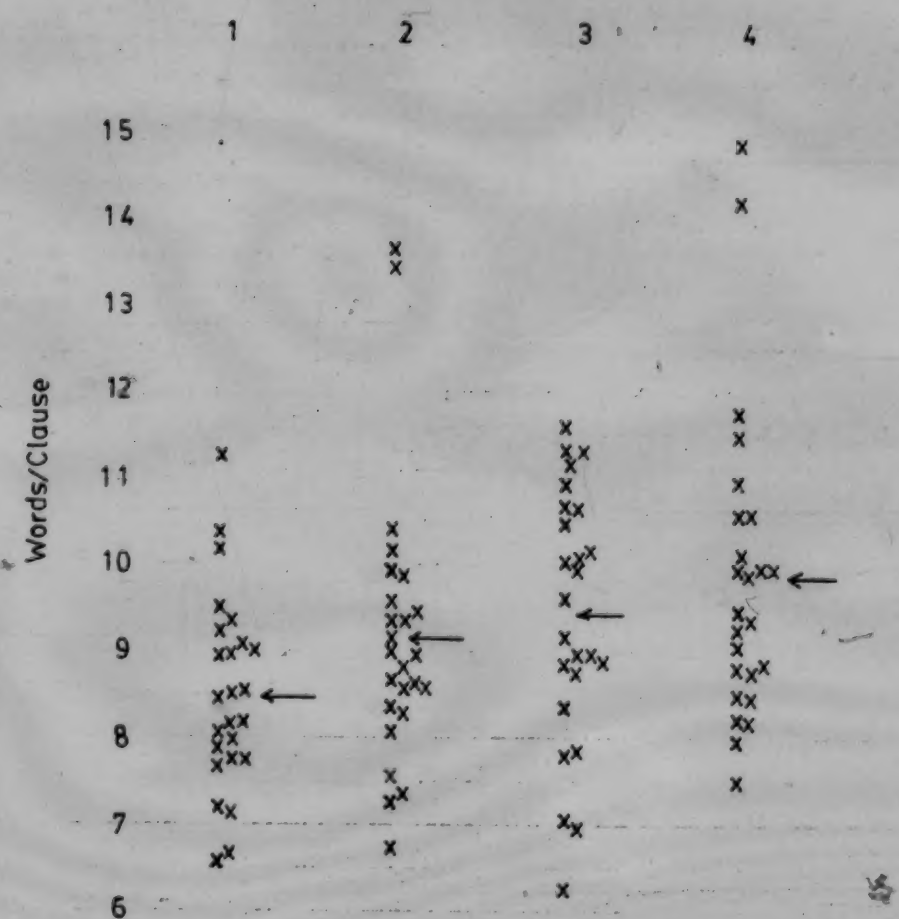
*These figures for mean words per clause are, generally speaking, higher than those which resulted from Hunt's studies into the syntax of Grade 12 students. (See Tables 1 and 2.) For instance, Hunt's 1970 study determined that high ability Grade 12 students wrote clauses which averaged 8.39 words while low ability Grade 12 students wrote clauses which averaged 7.42 words.

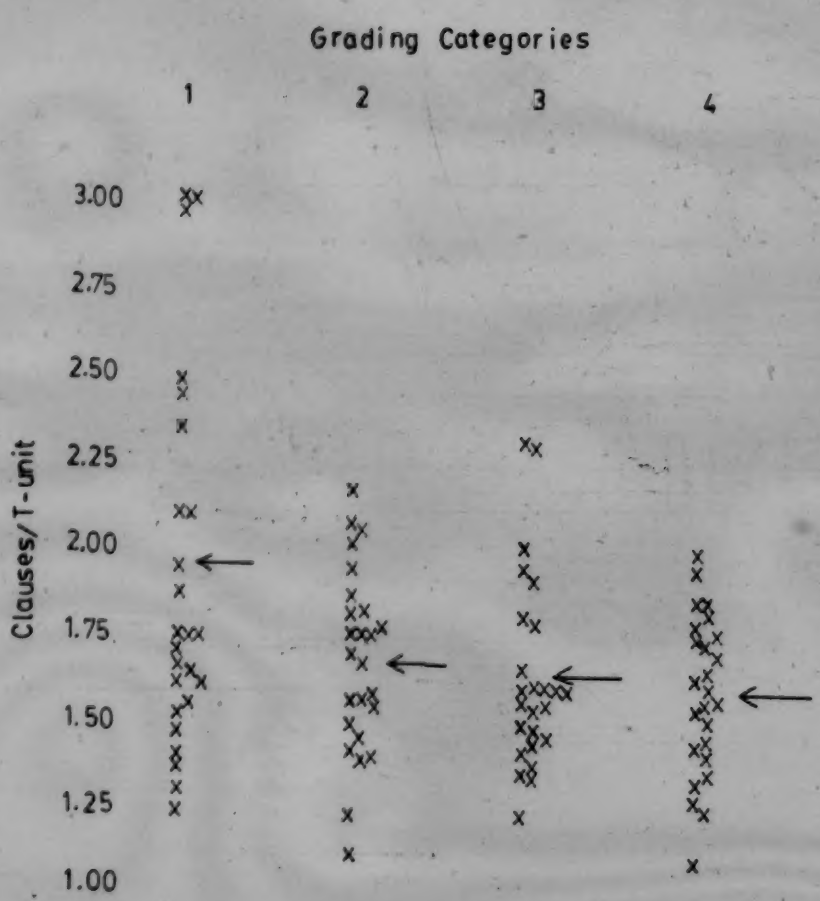
FIGURE 3
Mean Words/Clause



Each x represents one composition.
Arrow denotes mean.

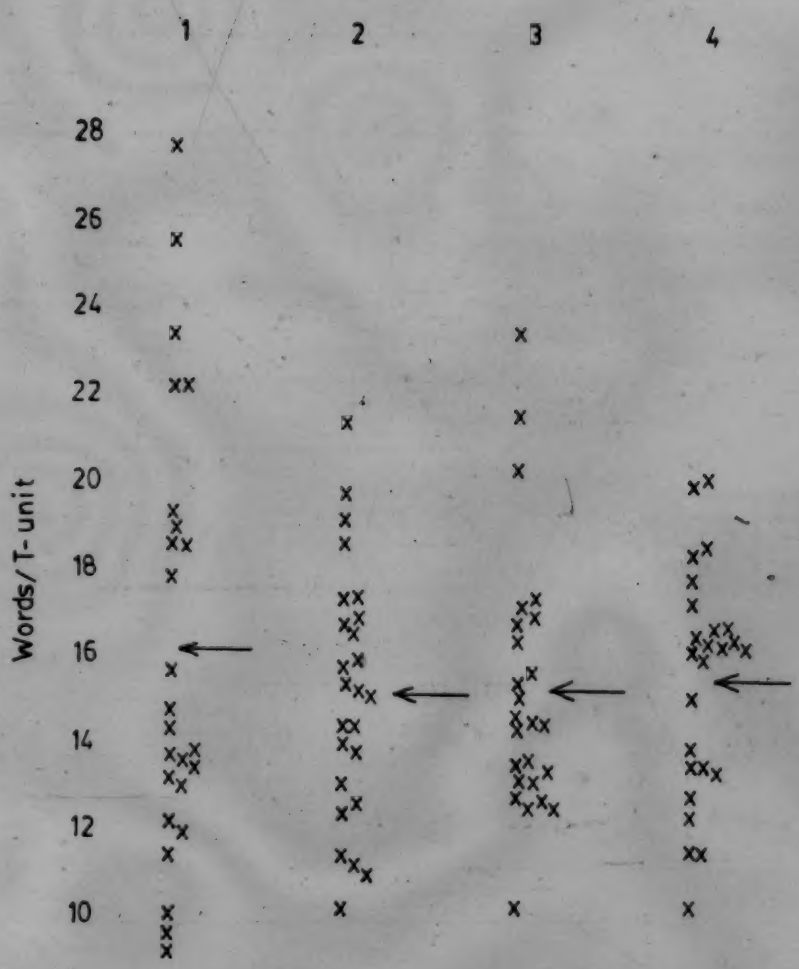
FIGURE 4

Mean Clauses/T-unit



Each x represents one composition.
Arrow denotes mean.

FIGURE 5
Mean Words/T-unit



Each x represents one composition.
Arrow denotes mean.

be of poorest quality.*

Mean T-units per sentence showed a decrease, from category to category, similar to that of clauses per T-unit. Compositions in the lowest grading category averaged 1.48 T-units per sentence. Nearly every second sentence in these compositions of poorest quality was a compound sentence. Compositions in category 2 averaged 1.28 T-units per sentence, and those in category 3 averaged 1.20 T-units per sentence. Compositions awarded the highest holistic score averaged 1.18 T-units per sentence. On the average, only every fifth sentence in these compositions, considered by teachers to be of highest quality, was a compound sentence.

Mean words per sentence also decreased as holistic score increased. Compositions in grading category 1 contained sentences that averaged an amazing 25.68 words. Compositions in grading category 2 contained sentences that averaged 19.34 words, while in grading category 3, the average sentence was 18.40 words long. The sentences comprising the compositions in the highest grading category were the shortest, averaging 18.15 words. That the sentences in the poorest compositions were the longest and the sentences in the best compositions the shortest can be related to the functions of two other measurements. First, as has been described above, the sentences in the lowest grading category contained more T-units (in fact an average of thirty more T-units per 100 sentences) than did the sentences in the highest grading category.

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*As with mean words per clause, these figures for mean clauses per T-unit are higher than those reported by Hunt for Grade 12 students. Hunt's 1970 study reported that Grade 12 students of low ability wrote an average of 1.36 clauses per T-unit and that Grade 12 students of high ability wrote an average of 1.48 clauses per T-unit. (See Table 2.)

Also, the T-units in the lowest grading category were longer, on the average, than the T-units in the highest grading category. In turn, the reason that the T-units in the compositions of lowest quality were longer is that they contained so many more clauses, on the average, than did the T-units in the compositions of highest quality.

The only syntactic measure that did not show either a steady increase or decrease as holistic score increased was Words per T-unit. As is presented in Table 5, compositions placed by teacher-raters into the lowest grading category averaged 16.09 words per T-unit. Those placed in category 2 averaged 15.10 words per T-unit, and those placed in category 3 averaged 15.20 words per T-unit. The compositions considered by teacher-raters to be of highest quality averaged 15.45 words per T-unit.*

One way analyses of variance resulted in F ratios for the five syntactic measures which ranged from 3.933 for Clauses per T-unit, significant at the .05 level, to 0.396 for Words per T-units, not significant. (See Table 5.) Correlation coefficients relating the five

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*As with most of the syntactic measures examined during the present study, present figures for mean words per T-unit are vastly different from those reported by Hunt, and (in the case of words per communication unit) by Loban. (See Tables 1, 2 and 3.) This can be explained by the fact that compositions comprising the present sample all have a relatively high incidence of clauses per T-unit. The fact that the lowest grading category was made up of those compositions averaging the highest number of words per T-unit is due to the related fact that these compositions also contained the highest number of clauses per T-unit. The entire sample of the present study averaged 15.5 words per T-unit, approximately one word per T-unit higher than the 14.4 words per T-unit for average twelfth graders reported in Hunt's 1965 study.

syntactic measures to grading category ranged from .31 for Words per Clause to -.06 for Words per T-unit indicating little or no correlation (Franzblau, 1958: 81). In addition, although all five syntactic variables entered the final prediction equation which was a result of the multiple stepwise regression analysis, they entered on relatively late steps (steps 6, 7, 8, 10, and 11) and added relatively little predictive power to the equation. (See Appendix H.)

Thus the result of the analyses carried out in an examination of syntactic complexity seem to be, to some degree, inconclusive. Words per Clause and Clauses per T-unit, two of the five variables examined, appear to relate with writing quality. On the other hand, the other three variables examined, Words per T-unit, T-units per Sentence, and Words per Sentence appear to have little or no relationship with writing quality. Since the formulated hypothesis stated that all five of Hunt's syntactic measures were to be used to determine syntactic complexity, and since three of these five measures do not show a significant relationship to writing quality, the present investigator was unable to reject the null hypothesis in this case. The inconclusiveness of the results on the syntactic level forces the present investigator to reject the postulated hypothesis. There is not enough evidence in the present study to state that syntactic complexity and writing quality are related. This finding supports the results of the bulk of the research directly concerned with the relationship between syntactic complexity and writing quality. Nold and Freedman (1977), Gebhard (1978), and Stewart and Grobe (1979) have all conducted studies which, like the present study, have found that syntactic

complexity does not appear to relate with writing quality.

The second hypothesis postulated at the level of syntax suggested that freedom from sentence errors (sentence fragments, comma splices, and fused sentences) would relate significantly with writing quality as perceived by teacher-raters. Table 5 presents the means for this variable and Figure 6 graphically compares both its means and its variances. Compositions placed in the lowest grading category by teacher-raters contained an average of 1.49 sentence errors per 100 words. Compositions graded 2 contained an average of 1.23 sentence errors per 100 words, and those graded 3, an average of 0.87 sentence errors per 100 words. Compositions awarded the highest holistic score averaged 0.49 sentence errors per 100 words.*

A one way analysis of variance using Sentence Errors per 100 Words as the criterion variable and grading category (writing quality) as factor resulted in an F ratio of 7.582 which was significant beyond the .001 level. (See Table 5.) The correlation coefficient between Sentence Errors per 100 Words and grading category was -.44, indicating a moderate degree of correlation. (See Appendix G.) Also, Sentence Errors per 100 Words was the fourth predictor of writing quality chosen

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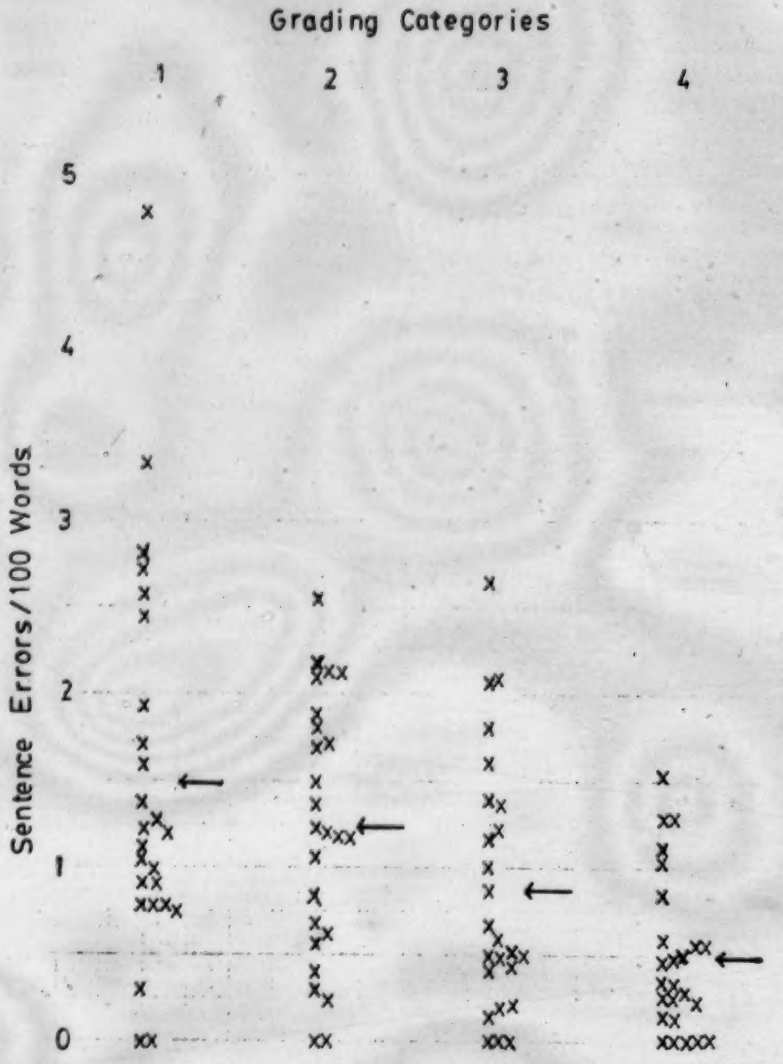
*Mean sentence errors per sentence and mean sentence errors per T-unit also decreased as holistic score increased. Compositions in grading category 1 averaged .30 sentence errors per sentence and .24 sentence errors per T-unit. Those in grading category 2 averaged .23 sentence errors per sentence and .18 sentence errors per T-unit. Compositions awarded a holistic score of 3 averaged .15 sentence errors per sentence and .13 sentence errors per T-unit, while compositions which received the highest score averaged .10 sentence errors per sentence and .08 sentence errors per T-unit.

FIGURE 6
Mean Sentence Errors/100 Words



Each x represents one composition.
Arrow denotes mean.

as a result of the multiple stepwise regression analysis, itself accounting for 1.6 per cent of the variance in quality scores. As a result of the statistical analyses, the null hypothesis was rejected, and the formulated hypothesis that the freedom from sentence errors does relate significantly with writing quality as perceived by teacher-raters was accepted. This finding supports a similar result found by Martin (1968) who discovered that the variable "sentence errors" (a composite of sentence fragments, comma splices, fused sentences, and lack of subject-verb agreement) was an important predictor of writing quality.

QUALITY AT THE LEVEL OF RHETORIC

The final hypothesis proposed during the course of the present study was

> On the Level of Rhetoric, coherence of ideas as determined by the use of cohesive devices will relate significantly with writing quality as perceived by teacher-raters.

Table 5 presents means for the variable Cohesive Devices per Sentence*, and, in addition, Figure 7 graphically illustrates both the means and variances of this variable. Compositions which had received a holistic score of 1 averaged 0.71 cohesive devices per sentence. Compositions which had received a holistic score of 2 averaged 0.82 cohesive devices per sentence, and those which had received a score of 3 averaged 0.92

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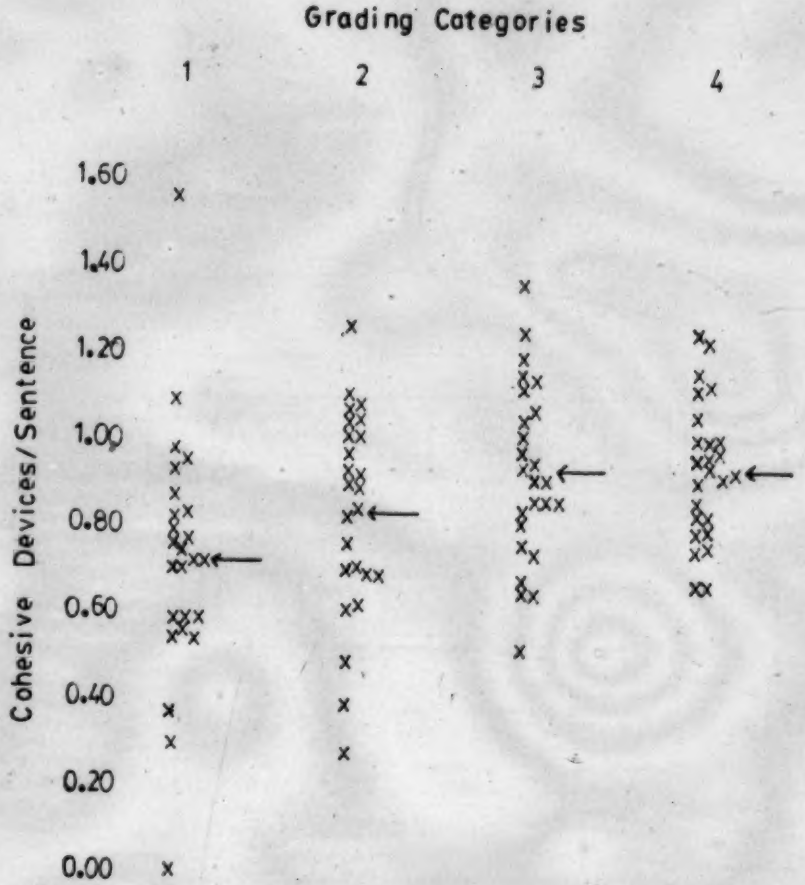
*Details of the various counts which made up this variable are given in Appendix C.

FIGURE 7

Mean Cohesive Devices/Sentence



Each x represents one composition.
Arrow denotes mean.

cohesive devices per sentence. Compositions in the highest grading category averaged the highest number of cohesive devices per sentence -- 0.93.*

A one way analysis of variance using Cohesive Devices per Sentence as the criterion variable and grading category as factor produced an F ratio of 5.017, significant at the .01 level of confidence. (See Table 5.) The correlation coefficient between grading category and Cohesive Devices per Sentence was .35, indicating a low degree of correlation (Franzblau, 1958: 81), but significant beyond the .001 level. (See Appendix G.) In addition, Cohesive Devices per Sentence entered the final prediction equation of the multiple stepwise regression analysis on step 8 and accounted for one per cent of the variance in quality scores. The statistical analyses led to rejection of the null hypothesis and acceptance of the formulated hypothesis that coherence of ideas, as measured by the number of cohesive devices per sentence does relate significantly with writing quality as perceived by English teachers.

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*The variable, Cohesive Devices per T-unit, also increased steadily as grading category increased. Compositions in the lowest grading category averaged .59 cohesive devices per T-unit. Compositions in the second grading category averaged .64 cohesive devices per T-unit and those in the third category, .76 cohesive devices per T-unit. Compositions which were in the highest grading category averaged .77 cohesive devices per T-unit.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

CONCLUSIONS

As a result of the analyses reported in Chapter IV, it was concluded that significant quantitative differences do exist among categories of compositions judged by English teachers to be of different quality. Significant differences among grading categories existed at all levels of the conceptual schema. Due to the nature of the sample, certain generalizations could be made regarding English teachers' perceptions of Grade 12 writing produced by Alberta students during a testing situation.

At the pre-verbal level, there was a marked difference in the frequency of spelling errors exhibited by categories of compositions judged by teachers to be of different quality. Compositions judged by teachers to be of high quality contained relatively few spelling errors while those judged to be of low quality contained relatively many spelling errors. One definite conclusion of the present study must be that there is a strong relationship between freedom from spelling errors and English teachers' perceptions of writing quality. Although the study's statistical analyses, which imply relationship, do not prove causality in and of themselves, the addition of logic and intuition would suggest that English teachers perceive compositions containing few spelling errors to be of better quality than those containing many spelling errors.

Spelling error freedom was, however, only one variable uncovered by the present study which could be related to teachers' perceptions of writing quality. At the level of diction, the use of polysyllabic words (especially, according to the statistical analyses, the use of different words of four or more syllables), and the freedom from error in such usage, also significantly differed as teachers' perceptions of writing quality differed. Compositions judged by English teachers to be of high quality contained relatively many polysyllabic words and relatively few errors in the use of polysyllabic words while compositions judged to be of low quality contained relatively few polysyllabic words and relatively many errors in the use of such words. English teachers seem to perceive compositions containing few polysyllabic words, and polysyllabic words incorrectly used, as being of lower quality than compositions containing relatively many polysyllabic words correctly used. Again causality cannot be proven by relationship, but certainly it would seem that the presence of complex diction correctly used does affect teachers' perceptions of writing quality.

At the level of syntax other conclusions could be drawn as a result of the analyses conducted during the present study. Although it cannot be stated that syntactic complexity per se was related to English teachers' perceptions of writing quality, certain syntactic factors did seem to relate, to some degree, with teachers' perceptions of writing quality. Compositions containing relatively long clauses and relatively few dependent clauses seemed to be perceived by teachers to be of better quality than compositions containing relatively short clauses and relatively many dependent clauses. English teachers seem

to prefer syntax structured into what has traditionally been called "simple" sentences -- syntax which results in sentences composed of relatively few T-units, T-units composed of relatively few clauses, but clauses composed of relatively many words. It may be that good writers condense and compress clauses and phrases into single word modifiers. Thus, while these writers seem to be writing "simple" sentences, these sentences have much embedding.

At the level of syntax, the freedom from traditional sentence errors also seemed to relate to English teachers' perceptions of writing quality. Compositions judged by teachers to be of high quality contained relatively few traditional sentence errors -- sentence fragments, comma splices, and fused sentences. Conversely compositions judged by teachers to be of low quality contained relatively many sentence errors. Obviously, English teachers prefer compositions containing few sentence errors.

At the final compositional level examined during the present study, that of rhetoric, quantitative differences which related to differences in English teachers' perceptions of quality were also detected. Compositions judged by English teachers to be of high quality contained relatively many cohesive devices, while compositions judged by teachers to be of low quality contained relatively few cohesive devices. Not surprisingly, English teachers prefer compositions whose sentences are noticeably related.

Thus it was concluded that quantifiable variables other than syntactic complexity <u>are</u> related to English teachers' perceptions of writing quality and that optimal variables (optimal in terms of the

significance and utility of the variables investigated) do exist at the various levels conceptualized. These variables are:

1. at the pre-verbal level, spelling error freedom
2. at the level of diction, the use of different words of four or more syllables
3. at the level of syntax, the length of clauses and sentence error freedom
4. at the level of rhetoric, the use of cohesive devices.

A conclusion that cannot be drawn as a result of the present investigation, however, is that any one level within the conceptual schema is a "best indicator" of writing quality as perceived by English teachers, or that any aspects of written composition have the "most impact" upon its quality. Spelling error freedom may be the most obvious variable in that it seems to be the most statistically significant variable, making the pre-verbal level the most obvious compositional level affecting teachers' perceptions of writing quality. But simply being "most obvious" does not make any particular variable, or level, "best". What can be concluded as a result of this investigation is that all compositional levels are of importance to teachers' perceptions of writing quality and that English teachers, when judging compositions for quality, are engaged in a complex process indeed. English teachers, when judging compositions for quality, are weighing, either consciously or unconsciously, all of the variables herein quantified as well as many which were not investigated during the present study. (The multiple stepwise regression analysis only accounted for 77% of the variance in quality scores. Thus, the present variables left 23%

of this variance unaccounted for. See Appendix H.)

Also, the results of the present investigation suggest that the unwritten implication which exists in the literature produced by researchers concerned with written syntax (O'Hare, Combs, Morenberg et al, and to some degree Hunt and Loban), linking syntactic complexity and writing quality, must be viewed with a certain amount of suspicion. The results of the present study do not support the notion that syntactic complexity per se is related to teachers' perceptions of writing quality, even though the complexity, or at least fluency, of clauses might be.

The results of the present study seem to indicate that there is syntactic complexity and there is syntactic complexity. The kind of syntactic complexity which results from the overuse of dependent clauses or the overuse of coordination between independent clauses is related negatively with writing quality as perceived by teachers of English. (See Appendix G.) The kind of syntactic complexity which results from the lengthening of clauses, however, is related positively with teachers' perceptions of writing quality.

THEORETICAL IMPLICATIONS

One purpose of the present study was to develop and, to some extent, evaluate the validity of a conceptual schema for understanding written composition. Although such a schema can hardly be called a "theory" in any rigorous sense, the concept of compositional levels, which underlies and gives direction to the present study, might be the

eventual footing upon which a theory of written composition may, some day, be founded.

In general, composition, any kind of composition, is a putting together of parts. The painter, the house builder, the musical composer, the writer, all who compose must blend constituent parts to forge a unified and coherent whole. The more skill involved in blending the constituent parts, the better will be the perceived quality of the unified and coherent whole on the part of the viewer, listener, or reader.

It is obvious enough that compositions consist of parts, but it may not be quite so obvious that these parts exist on various levels. All those who compose begin with an internalized conception of what the whole should be like. Langer calls this the "commanding form of the work" (1953: 122). This is the super-level of the composition, the level at which the process of composition is aimed. Before the actual process of composition begins (that is, the physical process) the internalized conception of the whole only exists mentally. It may have a full-blown mental existence in which case the "composer" can "see" what the eventual physical manifestation of the whole will be. Or it may only be partially conceived, in which case the eventual physical manifestation of the whole will appear in blurred image to the "composer".

In any case, once the whole is mentally visualized, in whatever clarity, the physical process of composition must begin. This is where the skill of the "composer" comes to play. The painter often begins with a "wash" and then applies layers of paint to the canvas. The house builder begins with the foundation, adds the framing and the

roofing and then finishes, both inside and out. The composer often begins with a theme and then adds levels of variation and repetition. And the writer begins with words; moves on to phrases, clauses, and sentences; and finally ends with the composition itself -- a physical manifestation of the originally mentalized whole. The mere fact that the original conception was "blurred" does not mean that the end product of the process of composition will be unclear. Especially in writing, the process of composition can be instructive to the "composer" and, depending upon the amount of his talent, the writer can render what was originally unclear mentally into a physical representation of crystal clarity. Unfortunately, the converse is also true. The untalented writer may take an original conception which was the product of genius and render it unintelligible, either because he cannot blend its parts together in a unified and coherent manner or because he has mutilated the parts themselves.

The concept of compositional levels which guided the present research seems to be, at least to some degree, validated by the results of the present investigation. Certainly teachers' perceptions of writing quality can be related to all of the compositional levels conceptualized. When evaluating student compositions, teachers seem to be at least as concerned with spelling as they are with coherence, and at least as concerned with diction as they are with syntax. The study suggests that teachers, when reading student compositions, are concentrating on the super-level of the composition, the "commanding form" or in the case of discursive writing, the meaning of the composition. Any error of usage, any unconventional diction or syntax which draws

attention to itself in a negative manner* will interfere with the teacher's perception of meaning and deflect his attention away from this super-level to compositional levels which are best perceived by the unconscious mind of the reader. Thus teachers prefer correctly-spelled words because correctly-spelled words are not noticed as physical entities by the reader. It is the meaning that derives from them that is noticed. Teachers prefer complex diction correctly used because it contributes more to the meaning of a passage than does mundane diction. They prefer the kind of syntactic complexity which results from lengthened clauses (and a preponderance of "simple" sentences) because this kind of syntactic complexity is more easily "decoded" and understood than the kind which results from an overuse of dependent clauses or over-coordination of independent clauses. And they prefer to read sentences which are obviously coherent because the meaning produced by such sentences is not as ponderous to follow as is the meaning which must be painfully gleaned from unrelated sentences.

All of this is not to suggest that teachers want an "easy ride" when reading and evaluating student writing or that readability equates with writing quality. What is being suggested, however, is that English teachers, like all readers, want to be rewarded when they must put special effort into their reading. And the coin of the realm is meaning.

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*"In a negative manner" because skillful writers may purposefully draw their readers' attention to compositional levels other than the ultimate level of meaning when the special twist of usage or of diction or of syntax that has been used <u>contributes</u> to the ultimate meaning of the piece.

IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The present study was concerned with analyzing a number of those factors of written composition which could be quantified. Although some interesting findings were the result of this analysis, and the results of the present study do indicate that continued quantitative analysis of written composition would be fruitful, limiting this study of written composition to quantitative factors greatly reduced its effectiveness.

Thus the first, and perhaps the major, implication for research suggested by the present study arises out of its methodology rather than its findings. Studies into written composition conducted by future researchers should, perhaps, combine both quantitative methods of analysis, which have the benefit of being relatively objective and reliable, with analyses that are more qualitative or subjective in nature, but which may easily be much more valid, and certainly much more interesting. On the level of syntax, for example, it would be rewarding for a researcher to examine not only the length and type of syntactic units present in student compositions, but, as well, the <u>effect</u> that various syntactic units have upon the reader. Those elements of composition which cannot be readily quantified, such as tone and style, should not be ignored by researchers simply because it is difficult to attach neat numbers to them. The development of qualitative methods for examining written composition will have to be one of the challenges that must be met by future researchers concerned with student writing.

While the major implication for research may arise out of the methodology of the present study, a number of research implications do arise, as well, from its findings. The first of these has to do with the practice of researchers to correct student compositions for spelling and punctuation, and for handwriting, prior to evaluating them for purposes of research. The present study has found that spelling error freedom is an important predictor of English teachers' perceptions of writing quality. The prevailing attitude of reseachers that factors such as spelling are "extraneous" (O'Hare, 1973: 51) is thus called into question by this finding.

Perhaps spelling should be taken a shade more seriously by researchers concerned with written composition. One follow-up study which would further examine the effect of spelling upon teachers' perceptions of writing quality would be to correct the present sample (or a similar sample) for spelling errors and have it re-evaluated by Grade 12 English teachers. It would be interesting to see whether or not significant differences in grading would occur, and if these could be related to the correction of spelling errors. Similar kinds of alteration could be carried out at other compositional levels by reducing or increasing the number of polysyllabic words, altering the lengths and types of syntactic units, and reducing or increasing the number of cohesive devices present in the composition. Such alterations could be made in steps with evaluations conducted by experienced English teachers at each step. The results of such a series of studies might very well prove to be of interest.

A second implication for research which arises out of the findings of the present study is that although sentence-combining practise may increase the syntactic complexity of students' writing (O'Hare, Combs, Morenberg et al), it is somewhat spurious to suggest, or even to imply, that increased syntactic complexity per se causes increased perception of writing quality on the part of teacher-raters. Future researchers might wish to examine the standard deviation of T-unit or of clause length as related to teachers' perceptions of writing quality, rather than the mean lengths of such units.

The present study demonstrated that only two of the five syntactic measures studied showed significant differences which could be related with English teachers' perceptions of writing quality. If future researchers wish to discover, more clearly, the effects of syntactic complexity upon teacher-raters' judgments, perhaps the best method would simply be to ask teacher-raters what aspects of syntax they use as a basis for evaluation. Although such a descriptive survey may not provide any definitive answers, it could well pose important questions that could then be answered by more rigorous types of analysis.

Another suggestion for further research arises out of the present study. A random sample from the June, 1980 Alberta English Written Composition Achievement Test has been selected and put into safekeeping. Also, Alberta Education proposes to draw random samples from the 1982 and 1984 exams yet to be written. Thus, replication of aspects of the present study could quite easily be carried out using very similar samples. It would be interesting to see if similar findings result

from similar analyses as the years progress, or if English teachers' perceptions of writing quality change with the years.

IMPLICATIONS FOR INSTRUCTION

Many teachers, the present researcher included, have traditionally believed that spelling could not or should not be taught at the high school level. Yet the results of the present study demonstrate that freedom from spelling error relates quite highly to teachers' perceptions of writing quality. To alleviate this apparent discrepancy it may be necessary to find a place in the high school for the teaching of spelling. Shaughnessy has stated that

> the ability to spell is viewed by many as one of the marks of the educated person, and the failure of a college graduate to meet that minimal standard of advanced literacy is cause to question the quality of his education or even his intelligence (1980: 161-162).

The same could easily be said of high school graduates.

Shaughnessy herself has suggested methods that could be used to assist older students to improve their spelling (1980: 160-186). Such methods need not be overly time-consuming, and may easily repay, many fold, any effort made on the part of teachers by increasing students' competence as communicators.

Another implication for teaching which seems to be suggested by the present investigation is that vocabulary and diction must continue to be taught at the high school level. The present study has shown that the size of a writer's vocabulary, as manifested in a composition by his use of polysyllabic words, is related to teachers' perceptions of quality. Obviously it should be the duty of English teachers to

assist their students to increase their store of words and to increase their ability to use complex words correctly.

At the level of syntax the findings of the present investigation suggest additional interesting implications for teaching. For instance, these findings suggest that the ability to write long T-units or long sentences need not be nurtured as an end in itself by high school English teachers. These findings also suggest that it would be worthwhile for teachers to nurture the ability to write long clauses.

All of this is not to suggest that the use of the T-unit does not have important instructional connections. Quite the contrary. Appendix G demonstrates that important relationships exist between three variables -- T-units per Sentence, Cohesive Devices per Sentence, and Sentence Errors per 100 Words. The correlation coefficient between T-units per Sentence and Cohesive Devices per Sentence is -.38; the correlation coefficient between T-units per Sentence and Sentence Errors per 100 Words is .43, and the correlation coefficient between Sentence Errors per 100 Words and Cohesive Devices per Sentence is -.46. All of these correlation coefficients indicate moderately high relationships, a fact which may have important instructional implications. The indications are that those students who write few T-units per sentence, who, in fact, tend to write their sentences as T-units, tend to make fewer sentence errors and make more use of cohesive devices between sentences than students who write many T-units per sentence. It seems that students who are able to see natural units of meaning in terms of T-units ("simple" and "complex" sentences) may have an advantage in that, since they have a "feeling" for such units

of meaning, they are less apt to write sentence fragments, comma splices, and fused sentences. Also, because such students can see that such units are, indeed, separate from one another, they can also see the need for providing them with some sort of relationship by using cohesive devices to join them. Thus the T-unit could be an important instructional tool that could have payoffs in two directions. Re-defining the English sentence as a T-unit may allow students to avoid making sentence errors and to increase their ability to create coherence between sentences.

The results of the present study also cause this writer to question the use of sentence-combining practice and instruction in sentence combining if such practice and instruction are being used to foster the writing of longer and ever longer syntactic units. Students should not be given the idea that "longer" syntax is necessarily "better" syntax. Certainly sentence combining should still have a place in secondary English classrooms. After all, whatever else can be said about sentence combining, its practice <u>does</u> seem to produce better writing, perhaps because it allows students to notice that syntactic options are available to them and that they can have some control over which option they choose to utilize. Also, as a glance at any sentence-combining text will demonstrate, students practicing sentence combining are also practicing skills which are associated with compositional levels other than syntax. As Strong states

> Because the exercises give the student something to say, they provide a relatively non-threatening context for teaching some transcribing fundamentals -- penmanship, punctuation, capitalizaion, and accurate spelling -- as well as some larger matters of mechanics -- agreement, pronoun reference, parallelism, and so on. (1976: 60)

As well, sentence-combining practice allows the student to use words in contexts where he might otherwise not use them. Take, for example, the following set of sentences from an exercise in Strong's Sentence Combining: A Composing Book:

1. The night had been brittle cold.
2. It had been black.
3. It had been pierced.
4. Slivers pierced the night.
5. The slivers were light.
6. The slivers were from the city. (1973: 66)

The words "brittle", "slivers", and "pierced" would probably not be used in this context by the average high school student. Obviously, sentence-combining practice also allows students to practice diction. Advocates of sentence combining may be selling syntax over the counter, but, as well, they are certainly doing a brisk trade in vocabulary and diction under the counter.

In addition, the effects of sentence-combining practice may extend beyond the sentence to the paragraph or even the composition itself. Exercises such as those from Strong's book do not stop at the sentence. Connections are being made between sentences, and the end product of each exercise is a paragraph. Strong even states in the preface to Sentence Combining: A Composing Book that the exercises are designed to help students "develop a feel for both sentence structure and paragraph organization" (1973: xii). Thus, sentence combining must continue to be used as an instructional method, but its rationale should never be to increase the length of syntactic units as an end in itself.

A final teaching implication arising from the present study is that methods used to achieve coherence between sentences constitute

worthwhile items for instruction. It has been found that compositions which achieve more obvious coherence between sentences are judged by teacher-raters to be of better quality than compositions which use less coherence between sentences. Perhaps English teachers should teach their students the various methods which can be used to achieve coherence, first by instructing students how such relatively simple methods are used, and second by devising exercises that can be used by students to practice the various methods.

AN IMPLICATION FOR EVALUATION

An important conclusion which arose as a result of the present study was that all of the compositional levels were of importance to the evaluation of student writing. The findings of this study suggest that the evaluation policy of secondary English departments should include elements relating to each of the compositional levels conceptualized herein. If no "best indicator" of writing quality exists, English teachers will have to continue doing what, it seems, they have always done. When English teachers are evaluating student writing, they will have to continue concerning themselves with spelling, diction, sentence structure, and coherence as well as all of the other aspects of composition -- tone, style, organization, content, and on and on.

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A P P E N D I X A

The Alberta Written Composition Achievement Test for 1978

The Alberta Written Composition

Achievement Test for 1978

The population from which the present sample was drawn consisted of compositions written during a testing situation by the students enrolled in Grade 12 English courses (English 30 or 33) in Alberta in June of 1978. In all, 12,965 students wrote the Alberta Written Composition Achievement Test in 1978. The instructions which appeared on the cover page of the exam booklet were as follows:

Alberta

EDUCATION

SENIOR HIGH SCHOOL ENGLISH — WRITTEN EXPRESSION

SECTION A — GENERAL DIRECTIONS

The time allowed for this test is 2 hours.

Choose ONE of the STATEMENTS on page one as a basis for your composition and consider the SUGGESTIONS FOR WRITING outlined on page one.

The booklet provides pages for rough work and for finished work. Pages labelled FOR FINISHED WORK should contain your completed draft. Neat revisions on these pages are acceptable.

Provide a title for your composition.

You may use a dictionary and any other reference books, such as a thesaurus and writer's guide, which are used to assist in the accuracy and effectiveness of expression.

Finished work written in blue or black ink will be appreciated.

How well you write is more important than how much you write. Your composition, however, should be of a length which permits you to develop and present your ideas effectively.

(This test was created by Alberta teachers, and the format has been field-tested in Alberta schools.)

Figure 8
1978 Written Expression Test:
Instructions

The statements which were to be used "as a basis for . . . composition" and the "suggestions for writing" were as follows:

ASSIGNMENT: Choose ONE of the following STATEMENTS as a basis for your composition and consider the SUGGESTIONS FOR WRITING outlined below.

STATEMENTS	Check the STATEMENT you have chosen
1. The most important freedom is the freedom to pursue one's dreams.	_____
2. Modern society treats young people and old people in the same ways.	_____
3. Money and material goods are not necessarily the measures of success and happiness.	_____
4. Nature in Alberta expresses itself in beautiful extremes.	_____
5. Young people should have a greater say in government for it is their future that is being shaped.	_____
6. It is a myth that young people are rebellious. They are, in fact, of any group the most docile and the most resistant to change.	_____

SUGGESTIONS FOR WRITING

No matter which statement you write about, make your central idea or theme clear. Support it with information and observations from your reading, viewing, and first-hand experiences. Use the prose writing methods and techniques which permit you to express your ideas most confidently. Some possible ways are as follows:

— Construct arguments to persuade someone to accept your point of view.

— Describe situations which will illustrate and support the statement you have chosen.

— Explain your point of view by referring to someone or something you know or have read about.

— Compare the situation in the statement with one from your own experience.

— Agree or disagree with the statement.

Figure 9
1978 Written Expression Test:
Topic Statements and Suggestions for Writing

The papers were evaluated by experienced high school English teachers teaching in Alberta high schools in June of 1978.* Four

*The present investigator was one of the teachers selected to score the 1978 test and spent an exhausting weekend in June grading papers in Lethbridge.

marking centers were set up in the province -- in Edmonton, Calgary, Lethbridge, and Grande Prairie, and a mixture of papers was sent to each center. In other words, the Lethbridge center did not handle only those papers from Lethbridge or even only those papers from Southern Alberta. An effort was made to have each marking center handle papers written by both urban and rural students and papers written by students living in different geographical regions of the province.

All of the 165 teachers who participated as evaluators attended prior workshops where they were instructed in holistic marking by Alberta Education personnel. These workshops included an explanation of the "philosophy" behind holistic marking as well as practice in such marking. Instructions to teacher-raters (really descriptions of the various grading categories), which also constituted page two of the examination booklet, are shown in Figure 10.

After reading a composition for "general impression", a teacher-evaluator placed it into one of the grading categories. After a composition had been read and graded once, it was handed to an Alberta Education clerk who recorded the grade and then, after covering the mark, passed it to a second marker. This process continued until three-mark agreement was reached. No marks other than the grade and the marker's identification number were made on any of the compositions. Thus, all papers were graded "blind", and all received more than one evaluation. Teacher-raters were asked to concentrate upon the positive aspects of each composition graded. Frequent consistency checks formed part of the evaluation procedure. During the consistency checks, groups of teacher-raters would read,

SCORING OF WRITTEN EXPRESSION

Writing will be scored on the strengths shown in the selection, organization, development, and expression of the ideas and feelings you present on the topic you choose. Each paper will be scored according to the category in which most of the strengths lie.

CATEGORIES

4. **Some writing gives the impression that it is the product of exceptional thought and expression. Carefully chosen and closely related supporting thoughts and details develop the central idea or theme. The content is organized so that the writer's interpretation, attitude, and purpose are clear. The expression reveals a mature use of sentence structure, grammar, spelling, and vocabulary. Such writing demands respect. At the completion of High School some students produce writing of this quality.**

3. **Some writing gives the impression that it is the product of proficient thought and expression. Appropriate supporting thoughts and details develop the central idea or theme. The content is organized so that the writer's interpretation, attitude, and purpose are quite clearly seen. The expression reveals a mastery of sentence structure, grammar, spelling, and vocabulary. Such writing prompts attention. At the completion of High School many students produce writing of this quality.**

2. **Some writing gives the impression that it is the product of limited thought and expression. Conventional thoughts and details develop the central idea or theme. The content is organized so that the writer's interpretation, attitude, and purpose are somewhat vague. The expression reveals a mechanical approach to sentence structure, grammar, spelling, and vocabulary. Such writing is usually accepted as adequate. At the completion of High School most students produce writing of this quality.**

1. **Some writing gives the impression that it is the product of unorganized thought and expression. A collection of unrelated ideas leaves the central idea or theme uncertain. The content is presented so that the writer's interpretation, attitude, and purpose are sometimes unclear. The expression reveals a lack of assurance in sentence structure, grammar, spelling, and vocabulary. At the completion of High School some students may produce writing of this quality.**

Please note that the markers, in general, will concentrate on your strengths.

Figure 10
1978 Written Expression Test:
Scoring of Written Expression -- Categories

grade, and discuss a set of compositions. Teacher-raters read and graded an average of approximately 20 compositions an hour.

The marking page (the back cover of the examination booklet) appeared as follows:

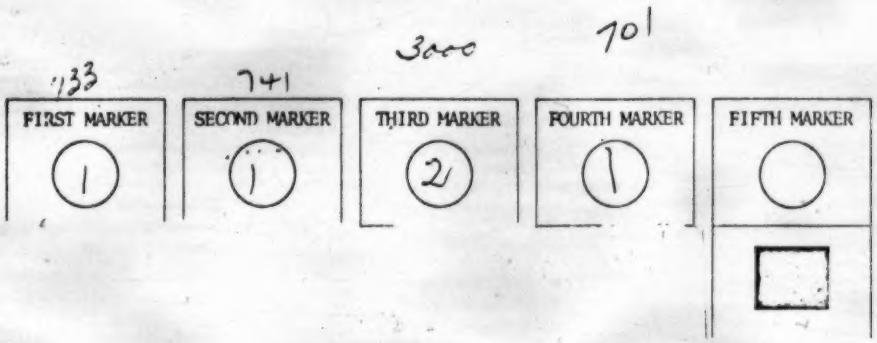

Figure 11
1978 Written Expression Test:
Marking Page

This particular paper reached three-mark agreement after it had passed through the hands of the fourth marker. The numbers in the circles are the various holistic marks received by this particular paper. The numbers above the squares are the teacher-raters' identification numbers. This particular paper received a holistic mark of 1 which put it in the lowest grading category.

If any paper did not elicit three-mark agreement after five readings, it was given to a head marker who made the final decision as to the grade that the paper would receive by averaging together, to the nearest whole number, the five marks it had been awarded. Because the evaluation procedure resulted in a scarcity of 4 papers, an alteration

of the process of averaging marks together was introduced. Papers whose average score was greater than 3.0 (say 3.2) received a holistic score of 4. In spite of this procedure the vast majority (approximately 70%) of the compositions were awarded a mark of 2 by the teacher-evaluators.

The present sample of 100 compositions was drawn from a larger sample of 1,367 compositions selected at random from the total population of 12,965 by Alberta Education personnel. For the present purpose, 25 compositions were selected at random from those compositions which had achieved three-mark agreement in each grading category. Those papers which had received averaged scores were not part of the total population from which the present sample was drawn. This procedure was followed so that the sample would more closely represent teachers' perceptions of writing quality than might otherwise have been the case.

APPENDIX B

The Pilot Study

The Pilot Study

A brief preliminary pilot study was conducted on a small sub-sample of the present study's total sample. Six compositions were chosen from each grading category and analyzed for the variables whose means for this small sub-sample are presented in Table 6. This pilot study was indispensable to the present study because it allowed the present investigator to arrive at workable and objective methods of analytical procedure. (See Chapter III.) Also, as can be seen in Table 6, the preliminary variable means indicated that further study would be worthwhile. The only variable which was investigated during the pilot study, but which did not form part of the main analysis, was V14 -- Repetitions and Variations of Thesis per Sentence.

TABLE 6
Variable Means for Pilot Study

Grading Categories	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
1	289	4.21	2.13	5.24	2.04	1.27	0.22	8.25	1.78	14.65	1.43	20.08	0.58	0.29
2	473	1.47	1.80	6.09	2.44	1.88	0.11	9.71	1.44	13.92	1.36	19.09	0.58	0.35
3	546	0.37	0.77	7.17	4.71	3.58	0.02	9.53	1.50	14.22	1.19	16.78	0.79	0.37
4	637	0.29	0.38	7.79	5.28	3.55	0.03	10.06	1.62	16.35	1.24	20.22	0.77	0.49

List of Variables

V1 Total Words
V2 Spelling Errors per 100 Words
V3 Sentence Errors per 100 Words
V4 Words of Three Syllables per 100 Words
V5 Words of Four or More Syllables per 100 Words
V6 Different Words of Four or More Syllables per 100 Words
V7 Errors in Use of Words of Four or More Syllables per Total Words of Four or More Syllables Used
V8 Words per Clause
V9 Clauses per T-unit
V10 Words per T-unit
V11 T-units per Sentence
V12 Words per Sentence
V13 Cohesive Devices per Sentence
V14 Repetitions and Variations of Thesis per Sentence

A P P E N D I X C

Description of Raw Data

Analysis -- First Phase

Description of Raw Data Analysis -- First Phase

1. Words Analyzed: This factor included all words in a composition excluding those rejected for the reasons outlined below. Compound words containing two words either hyphenated or written together were counted as two words. For example "worthwhile", "blackboard" and "earth-shattering" were counted as two words. Contractions such as "can't", "don't" and "couldn't" were counted as one word. Abbreviations such as "U.S.A." and "tv" were counted as one word.
2. Words Rejected: Words were rejected for analysis if they fell into any of three categories. Following Belanger (1978), sentence fragments that could not be attached to a preceding or succeeding T-unit were rejected for analysis. Also, any quotations used or any words copied verbatim from the examination paper were rejected so that the sample analyzed would represent, as closely as possible, the student's own words.
3. Type 1 Spelling Errors: "Spelling" errors included in this category were of two varieties -- failure to capitalize when convention demanded capitalization such as the initial letter of a sentence or proper noun or capitalizing when convention demanded lower case letters such as capitalizing the initial letter of a verb or adverb that did not begin a sentence, and hyphenating between words commonly written as one word or vice versa. Although Type 1 Spelling Errors are not really spelling errors at all since all letters are present, and in their conventional order, they were

enumerated in the present study since most teachers would treat them as spelling errors.

4. Type 2 Spelling Errors: Spelling Errors included in this category were those errors which resulted from unconventional placement of letters to form words. Spelling "exactly" as "eggzaktley" would be an example of a Type 2 Spelling Error.
5. Total Spelling Errors: The sum of Type 1 and Type 2 Spelling Errors produced this factor. During the investigation, when any doubt arose as to the conventional spelling of a word, Webster's New World Dictionary (1978) was consulted for correct spelling.
6. Sentence Fragments: Any string of words punctuated as a sentence but not containing a subject (or compound subject) and predicate (or compound predicate) was enumerated as a sentence fragment. Also, any subordinate clause punctuated as a sentence was enumerated as a sentence fragment.
7. Comma Splices: The practice of using only a comma to link two simple sentences to form a compound sentence was enumerated as a comma splice.
8. Fused Sentences: The practice of using nothing at all or a coordinating conjunction not preceded by a comma to link two simple sentences to form a compound sentence was enumerated as a fused sentence.
9. Total Sentence Errors: This factor was produced by summing sentence fragments, comma splices and fused sentences.
10. Words of Three Syllables: This is simply the total number of words of three syllables present in the composition.

11. Words of Four or More Syllables: This is simply the total number of words of four or more syllables present in the composition.

12. Different Words of Four or More Syllables: This figure was created by listing all of the words of four or more syllables present in a composition, and then subtracting any repeated words or close cognates from the list. For the present purpose close cognates such as "material" and "materialism" were counted as the same word.

13. Diction Errors in Words of Three Syllables: This factor consisted of the total number of diction errors of words of three syllables present in a composition. The use of a word of three syllables in an inappropriate context was enumerated as a diction error. An example would be the use of the word "successions" in the following:

> Even youngsters experience small successes in everyday life. these minor successions such as tying their own shoelaces or cutting their own meat . . .

14. Spelling Errors in Words of Three Syllables: This figure represents the total number of spelling errors of words of three syllables present in a composition.

15. Total Errors in Words of Three Syllables: The sum of diction and spelling errors of words of three syllables in a compositon produced this figure.

16. Diction Errors, in Words of Four or More Syllables: Procedure was the same as for Factor 13 above except that words of four or more syllables rather than words of three syllables were considered.

17. Spelling Errors in Words of Four or More Syllables: Procedure was the same as for Factor 14 above except that words of four or more syllables rather than words of three syllables were considered.

18. Total Errors in Words of Four or More Syllables: The sum of diction and spelling errors of words of four or more syllables in a composition produced this figure.

19. Sentences: Following Hunt a sentence was considered "whatever is written between terminal marks" (1965:8). Whatever was punctuated as a sentence in a composition, including sentence fragments that were not rejected, was included in this factor, which comprised the total number of sentences in a composition.

20. T-units: This factor comprised the total number of T-units in a composition. Rules used to segment compositions into T-units were those outlined by Belanger (1978: 396-397).

21. Clauses: This factor comprised the total number of clauses present in a composition. Following Hunt

> In counting the number of clauses in the present writings, a clause was taken to be a structure with a subject and a finite verb (a verb with a tense marker). If subjects were coordinated, they merely lengthened the clause, and if any part of the verb phrase was coordinated, that also merely lengthened the clause. The whole thing was counted as one clause. (1965: 15)

22. Inter-Sentence Major Word Repetition: One device that can be used to achieve coherence is to link successive sentences by repeating, in the second sentence, a word or phrase which existed in the first sentence (Kane and Peters, 1969). An example of the use of such a device would be the use of the word "device" in the present sentence. This factor represents the total number of times word

repetition to achieve coherence between sentences was used in a composition.

23. Inter-Sentence Pronoun-Antecedent Cohesion: Another method of achieving coherence between successive sentences is to use a pronoun in the second sentence whose antecedent exists in the first sentence (Martin, 1968). This is demonstrated by the use of the word "this" in the present sentence. This figure represents the total number of times pronouns whose antecedents were in previous sentences were used in a composition.

24. Inter-Sentence Transitions: The use of transitional words or phrases such as "therefore", "nevertheless" and "as a result", usually but not always occurring at the beginning of the second sentence and used to connect it to the previous sentence, was enumerated.

25. Inter-sentence Logical Cohesion: Sometimes sentences are linked by logic rather than by mechanical devices as in the following example:

> A man's family is his most valued commodity. Children and wives are more precious than gold.

"Children" and "wives" are logical constituents of "family" and thus serve to connect the two sentences. Another example of logical cohesion is the rhetorical question whose answer exists in the following sentence. Only very obvious instances of logical cohesion were enumerated in the present study.

26. Inter-Sentence Synonym Cohesion: Two sentences can also be connected if a synonym of a word or phrase used in the first

sentence is used in the second sentence (Kane and Peters, 1969). The total number of times such connection was achieved in a composition constituted this factor.

27. Inter-Sentence Grammatical Similarity: Yet another method of achieving coherence between two sentences is to begin both sentences with the same grammatical construction (Kane and Peters, 1969). The total number of times such a device was used in a composition constituted this factor.

28. Use of Coordinating Conjunction to Begin a Sentence: Following Christensen (1968) the number of times a sentence was initiated with a coordinating conjunction (usually "And") was counted for each composition.

29. Total Cohesive Devices: The sum of factors 22, 23, 24, 25, 26, 27, and 28, as enumerated in each composition, produced the total number of cohesive devices used to connect succeeding sentences in each composition.

A P P E N D I X D

Description of Selected Variables

Analysis -- Second Phase

Description of Selected Variables

Analysis -- Second Phase

1. Spelling Errors per 100 Words: This ratio was calculated by dividing the total spelling errors found in a composition by the total number of words analyzed and multiplying this figure by 100.
2. Words of Three Syllables per 100 Words: This ratio was calculated by dividing the total number of words of three syllables present in a composition by the total number of words analyzed and multiplying this figure by 100.
3. Words of Four or More Syllables per 100 Words: This ratio was calculated by dividing the total number of words of four or more syllables present in a composition by the total number of words analyzed and multiplying by 100.
4. Different Words of Four or More Syllables per 100 Words: This ratio was calculated by dividing the total number of different words of four or more syllables present in a composition by the total number of words analyzed and multiplying this figure by 100.
5. Errors in Use of Words of Four or More Syllables per Total Number of Words of Four or More Syllables Used: This ratio was produced by dividing the total errors in words of four or more syllables by the total number of words of four or more syllables used in a composition.
6. Words per Clause: This ratio was produced by dividing the total number of words analyzed in a composition by the total number of clauses present.

7. Clauses per T-unit: This ratio was calculated by dividing the total number of clauses present in a composition by the total number of T-units.
8. Words per T-unit: This ratio was produced by dividing the total number of words analyzed in a composition by the total number of T-units present.
9. T-units per Sentence: This ratio was calculated by dividing the total number of T-units present in a composition by the total number of sentences.
10. Words per Sentence: This ratio was calculated by dividing the total number of words analyzed in a composition by the total number of sentences present.
11. Sentence Errors per 100 Words: This ratio was calculated by dividing the total number of sentence errors present in a composition by the total number of words analyzed and then multiplying this figure by 100.
12. Cohesive Devices per Sentence: This ratio was determined by dividing the total number of cohesive devices used to link successive sentences by the total number of sentences present in a composition.

APPENDIX E

Raw Data

Raw Data

List of Factors

1 Words Analyzed
2 Words Rejected
3 Type 1 Spelling Errors
4 Type 2 Spelling Errors
5 Total Spelling Errors
6 Sentence Fragments
7 Comma Splices
8 Fused Sentences
9 Total Sentence Errors
10 Words of Three Syllables
11 Words of Four or More Syllables
12 Different Words of Four or More Syllables
13 Diction Errors -- Words of Three Syllables
14 Spelling Errors -- Words of Three Syllables
15 Total Errors -- Words of Three Syllables
16 Diction Errors -- Words of Four or More Syllables
17 Spelling Errors -- Words of Four or More Syllables
18 Total Errors -- Words of Four or More Syllables
19 Sentences
20 T-units
21 Clauses
22 Inter-Sentence Major Word Repetition
23 Inter-Sentence Pronoun-Antecedent Cohesion
24 Inter-Sentence Transitions
25 Inter-Sentence Logical Cohesion
26 Inter-Sentence Synonym Cohesion
27 Inter-Sentence Grammatical Similarity
28 Use of Coordinating Conjunction To Begin Sentence
29 Total Cohesive Devices

TABLE 7
Values of Raw Data:
Grading Category #1

Factor	Composition (I.D. Number)																									Totals
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	
1	222	286	194	335	367	332	234	127	359	384	269	337	584	379	315	570	306	213	490	310	303	234	266	147	249	7812
2	27	0	0	0	0	0	0	19	11	25	0	0	26	7	14	9	23	25	0	15	10	0	10	22	0	243
3	1	2	0	2	15	4	1	2	5	0	0	3	2	0	2	20	1	1	10	5	3	4	4	1	4	92
4	14	7	1	3	24	5	5	8	24	30	2	14	29	6	5	11	15	3	17	9	8	4	5	6	0	255
5	15	9	1	5	39	9	6	10	29	30	2	17	31	6	7	31	16	4	27	14	11	8	9	7	4	347
6	1	0	0	1	6	0	4	1	0	0	0	0	4	1	2	0	0	3	0	0	0	2	1	0	0	26
7	0	1	0	13	4	1	0	0	4	2	0	1	0	1	3	4	0	2	3	8	3	1	1	0	1	53
8	1	6	2	2	0	2	0	0	8	1	3	0	4	1	0	7	0	1	3	0	0	0	0	0	2	43
9	2	7	2	16	10	3	4	1	12	3	3	1	8	3	5	11	0	6	6	8	3	3	2	0	3	122
10	6	14	17	5	14	23	15	2	4	20	18	29	19	12	14	22	14	8	10	20	3	8	22	2	7	328
11	5	6	8	3	9	4	2	1	2	28	9	3	10	10	1	5	8	2	16	10	6	4	9	3	4	168
12	2	5	4	3	6	3	2	1	2	13	7	3	7	9	1	3	5	2	5	4	3	3	6	3	4	106
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	3
14	6	2	0	1	2	2	2	0	1	6	0	4	5	2	0	3	5	2	3	1	0	1	2	1	0	51
15	6	2	0	1	2	2	2	0	1	6	0	4	5	2	0	3	6	2	3	2	1	1	2	1	0	54
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	1	0	0	7	1	0	0	1	17	0	1	7	0	0	4	2	0	3	1	2	2	1	0	0	50
18	0	1	0	0	7	1	0	0	1	17	0	1	7	0	0	4	2	0	3	1	2	2	1	0	0	50
19	12	14	13	15	26	11	16	12	2	24	11	22	23	27	15	33	11	12	16	21	13	17	13	7	18	404
20	12	21	16	35	28	15	15	14	13	27	14	25	25	32	17	44	12	12	26	31	22	16	12	11	22	517
21	29	32	27	51	36	37	29	19	39	47	26	40	74	49	28	61	36	25	54	38	38	26	28	19	35	923
22	6	3	5	6	5	1	6	5	0	6	4	6	9	6	6	20	5	5	9	7	7	9	6	0	6	148
23	1	2	1	1	6	2	3	2	0	6	2	4	1	7	1	4	7	1	0	4	3	1	2	0	7	68
24	1	0	1	1	1	3	0	0	0	3	0	5	3	3	0	3	3	0	2	2	1	1	0	1	1	35
25	0	0	1	0	3	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	11
26	1	0	0	0	0	0	1	0	0	1	1	1	0	1	1	1	0	0	1	2	0	1	1	0	0	13
27	0	0	1	0	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0	0	2	0	0	1	0	8
28	0	0	0	0	0	0	0	0	0	1	1	3	1	3	0	4	2	0	1	1	1	0	0	0	3	21
29	9	5	9	8	15	6	11	7	0	17	8	19	18	22	8	32	17	7	13	16	14	12	12	2	17	304

TABLE 8
Values of Raw Data
Grading Category #2

Factor	Composition (I.D. Number)																									Totals
	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	
1	503	689	442	530	389	283	333	466	482	535	322	416	641	504	239	354	301	613	411	352	572	438	468	515	240	11038
2	0	0	0	0	0	0	0	8	18	0	0	0	0	0	17	25	0	6	0	13	0	30	0	4	0	121
3	2	0	2	1	3	1	0	3	0	2	2	2	4	0	1	2	0	12	1	1	2	1	0	0	0	42
4	4	1	9	7	5	3	0	4	2	13	9	3	9	15	0	1	0	34	6	5	10	9	8	1	0	158
5	6	1	11	8	8	4	0	7	2	15	11	5	13	15	1	3	0	46	7	6	12	10	8	1	0	200
6	0	0	0	1	1	0	0	0	2	0	0	3	1	0	0	1	0	1	0	3	0	1	1	4	0	19
7	1	1	0	2	2	6	0	0	0	1	0	2	2	2	0	1	0	0	1	1	5	0	4	0	0	31
8	10	12	6	6	4	0	1	7	2	2	4	0	1	0	5	7	0	12	0	1	1	2	3	2	0	88
9	11	13	6	9	7	6	1	7	4	3	4	5	4	2	5	9	0	13	1	5	6	3	8	6	0	138
10	27	38	18	27	26	17	17	23	27	44	9	48	42	45	15	31	18	12	13	16	31	19	28	35	14	640
11	18	21	9	12	5	5	9	7	6	39	14	28	11	48	11	13	2	3	11	10	24	4	18	6	5	339
12	13	14	5	11	4	5	5	6	3	15	6	17	6	19	7	9	2	3	7	9	13	4	9	4	3	199
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
14	3	0	0	0	0	0	0	0	0	3	0	0	1	2	0	0	0	2	1	3	5	1	3	0	0	24
15	3	0	0	0	0	0	0	0	0	3	0	0	1	2	0	0	1	2	1	3	6	1	3	0	0	26
16	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17	2	0	0	1	0	1	0	2	0	1	2	0	1	0	0	0	0	2	0	0	0	0	1	0	0	13
18	2	0	0	1	0	1	0	3	0	1	2	0	1	0	0	0	0	2	0	0	0	0	1	0	0	14
19	29	29	26	30	15	22	19	33	25	25	25	29	27	24	11	10	15	32	23	21	18	26	35	31	16	596
20	41	44	34	37	21	28	20	41	28	31	29	29	30	30	19	18	19	44	25	23	30	32	43	34	16	746
21	58	68	53	62	29	31	37	50	56	54	48	40	47	54	33	37	41	65	51	40	58	49	62	60	29	1212
22	6	6	11	11	6	1	6	13	12	11	5	14	14	14	7	6	9	11	12	5	5	18	20	14	8	245
23	7	4	4	8	0	1	7	5	2	10	11	7	7	5	0	0	5	9	4	1	6	3	5	3	7	121
24	3	0	4	2	0	1	1	2	0	0	1	2	2	1	2	5	0	1	2	1	4	3	3	6	3	49
25	1	0	1	0	2	1	0	0	0	0	0	0	1	0	0	0	2	0	1	1	0	0	0	1	0	11
26	3	0	0	0	1	0	2	0	0	2	0	1	2	0	1	0	0	0	2	0	1	1	1	0	1	18
27	0	1	1	0	0	2	1	0	2	0	0	5	0	0	0	0	0	0	2	0	0	0	0	3	0	17
28	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	3	1	2	3	1	0	4	1	18
29	20	11	21	21	9	6	17	20	17	23	17	30	26	21	10	11	16	24	24	10	19	26	29	31	20	479

TABLE 9
Values of Raw Data:
Grading Category #3

Factor	Composition (I.D. Number)																									Totals
	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	
1	431	506	433	600	701	598	300	349	490	557	735	627	533	538	303	611	301	438	576	717	506	480	371	404	486	12591
2	0	0	20	0	21	0	0	0	27	0	20	0	0	13	0	2	0	35	0	25	0	7	0	0	0	170
3	0	0	2	0	0	2	0	0	4	0	11	1	2	1	0	0	0	0	1	4	0	0	0	0	2	30
4	1	2	0	1	1	3	1	0	3	1	10	4	5	1	3	3	3	2	1	6	0	4	4	4	3	66
5	1	2	2	1	1	5	1	0	7	1	21	5	7	2	3	3	3	2	2	10	0	4	4	4	5	96
6	0	2	2	0	0	0	0	2	1	0	3	1	7	0	0	1	0	6	0	0	0	0	0	0	0	25
7	0	0	0	0	0	0	0	1	0	0	4	1	3	1	4	2	1	1	1	7	1	1	0	0	1	29
8	5	0	4	3	1	6	0	0	5	0	3	1	1	0	4	8	1	0	2	8	2	1	0	2	0	57
9	5	2	6	3	1	6	0	3	6	0	10	3	11	1	8	11	2	7	3	15	3	2	0	2	1	111
10	41	40	32	31	31	36	27	29	42	35	70	28	27	48	11	53	16	20	40	38	28	35	25	26	38	847
11	29	17	16	23	27	37	15	8	27	33	7	15	15	22	1	15	15	19	9	23	22	25	14	12	13	459
12	20	10	12	23	14	30	13	5	12	32	5	11	10	10	1	12	11	15	7	18	13	15	14	12	7	332
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	5
14	0	1	0	0	0	0	0	0	0	0	4	1	1	0	1	3	0	0	1	2	0	0	0	1	2	17
15	0	1	0	0	0	0	0	0	0	0	4	1	1	0	1	4	0	0	1	2	0	0	0	1	6	22
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	1	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	8
18	1	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	8
19	27	33	28	36	35	34	23	27	24	34	40	33	39	20	16	41	9	40	33	26	22	33	21	20	25	719
20	32	33	33	47	42	41	23	28	30	41	49	44	37	23	24	49	14	43	40	42	25	36	22	26	28	852
21	43	51	52	77	67	56	34	56	46	58	65	70	53	53	43	78	27	63	63	80	57	44	32	46	43	1357
22	10	8	9	13	7	5	9	6	5	11	20	10	11	14	11	21	4	23	19	9	13	9	12	5	16	280
23	8	11	4	8	8	8	7	7	8	11	9	7	4	2	4	20	3	10	13	8	7	10	4	5	4	190
24	4	10	1	3	2	3	5	4	1	2	1	2	0	3	0	2	1	1	5	1	2	3	1	2	3	62
25	0	0	3	4	5	3	2	1	0	0	1	1	1	1	0	0	0	2	0	0	0	4	0	0	0	28
26	2	1	1	2	6	2	1	0	4	2	4	4	0	6	2	6	1	5	2	3	0	2	1	5	1	63
27	1	1	0	0	0	0	0	0	0	1	1	0	4	0	0	0	0	1	0	0	3	0	0	0	0	12
28	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	2	1	3	0	5	0	0	1	0	0	15
29	25	31	18	30	28	21	24	18	18	29	36	24	20	27	17	51	10	45	39	26	25	28	19	17	24	650

TABLE 10
Values of Raw Data:
Grading Category #4

Factor	Composition (I.D. Number)																								Totals
	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	
1	676	580	379	657	946	582	713	482	626	418	688	623	750	418	1049	270	855	789	729	415	660	366	815	757	777	16020
2	0	27	0	82	0	0	51	0	0	0	0	0	0	0	78	0	13	12	0	0	0	17	0	0	0	280
3	0	0	0	0	0	0	1	1	0	0	0	2	0	0	4	0	0	0	0	2	0	2	0	0	3	15
4	2	3	0	0	7	1	3	1	0	1	0	4	7	2	9	0	2	3	1	0	0	1	0	0	1	48
5	2	3	0	0	7	1	4	2	0	1	0	6	7	2	13	0	2	3	1	2	0	3	0	0	4	63
6	0	2	0	0	0	0	2	4	0	0	0	5	0	0	7	0	1	1	0	0	0	0	0	0	0	22
7	0	0	1	3	1	0	0	0	7	0	0	2	0	1	7	0	2	2	1	0	0	1	1	1	0	30
8	0	0	0	0	7	2	0	1	0	2	1	1	0	0	2	0	2	1	3	0	0	1	1	0	10	34
9	0	2	1	3	8	2	2	5	7	2	1	8	0	1	16	0	5	4	4	0	0	2	2	1	10	86
10	78	44	29	28	50	33	56	41	39	43	51	41	37	30	49	13	63	66	66	23	41	24	89	43	37	1114
11	24	27	35	24	40	35	54	11	13	22	33	16	47	20	36	7	52	44	25	15	17	21	54	26	19	717
12	17	17	23	18	26	23	32	9	12	19	22	15	21	19	25	7	27	32	13	11	15	15	30	22	8	478
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	0	0	0	2	0	1	0	0	0	0	1	2	0	2	0	1	0	0	0	0	0	0	0	0	10
15	1	0	0	0	2	0	1	0	0	0	0	1	2	0	2	0	1	0	0	0	0	0	0	0	0	10
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	3	0	1	0	0	1	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	9
18	0	0	0	0	3	0	1	0	0	1	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	9
19	35	39	16	31	45	27	40	27	37	28	43	39	43	33	68	20	53	37	32	25	41	25	34	35	38	891
20	42	43	19	40	58	35	44	24	49	30	51	38	45	41	91	22	64	43	41	26	44	32	44	44	48	1058
21	68	66	33	60	100	59	48	34	62	42	81	59	83	51	120	36	86	67	79	47	78	46	77	81	95	1658
22	8	7	3	15	16	9	15	18	18	15	16	8	18	10	18	7	12	19	22	14	24	12	8	22	31	365
23	4	6	2	3	8	10	14	7	5	4	12	11	10	11	11	6	16	15	3	7	8	5	7	8	2	195
24	7	11	1	2	6	1	1	3	2	1	6	5	7	6	4	1	6	7	6	6	7	1	5	1	0	103
25	0	0	3	7	5	0	4	1	5	3	2	2	0	3	5	4	1	0	1	0	0	3	2	0	1	52
26	3	3	3	1	1	1	8	1	4	1	1	5	6	7	3	1	5	2	2	1	1	2	5	2	1	70
27	1	2	0	0	1	0	0	0	0	1	1	1	2	1	1	1	2	0	1	0	1	0	0	0	1	17
28	0	0	0	0	0	0	0	0	1	1	1	1	0	0	3	0	0	3	4	0	0	0	1	1	0	16
29	23	29	12	28	37	21	42	30	35	26	39	33	43	38	45	20	42	46	39	28	41	23	28	34	36	818

APPENDIX F

The Selected Variables

Selected Variables

List of Variables

V1 Total Words (Words Analyzed)

V2 Spelling Errors per 100 Words

V3 Sentence Errors per 100 Words

V4 Words of Three Syllables per 100 Words

V5 Words of Four or More Syllables per 100 Words

V6 Different Words of Four or More Syllables per 100 Words

V7 Errors in Use of Words of Four or More Syllables per Total Words of Four or More Syllables Used

V8 Words per Clause

V9 Clauses per T-unit

V10 Words per T-unit

V11 T-units per Sentence

V12 Words per Sentence

V13 Cohesive Devices per Sentence

TABLE 11
Values of Selected Variables:
Grading Category #1

Composition Number	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
101	222	6.76	0.90	2.70	2.25	0.90	0.00	7.66	2.42	18.50	1.00	18.50	0.75
102	286	3.15	2.45	4.90	2.10	1.75	0.17	8.94	1.52	13.62	1.50	20.43	0.36
103	194	0.52	1.03	8.76	4.12	2.06	0.00	7.19	1.69	12.13	1.23	14.92	0.69
104	335	1.49	4.78	1.49	0.90	0.90	0.00	6.57	1.46	9.57	2.33	22.33	0.53
105	367	10.63	2.72	3.81	2.45	1.63	0.77	10.19	1.29	13.11	1.08	14.12	0.58
106	332	2.71	0.90	6.93	1.20	0.90	0.25	8.97	2.47	22.13	1.36	30.18	0.55
107	234	2.56	1.71	6.41	0.85	0.85	0.00	8.07	1.93	15.60	0.94	14.63	0.69
108	127	7.87	0.79	1.57	0.79	0.79	0.00	6.68	1.36	9.07	1.17	10.58	0.58
109	359	8.08	3.34	1.11	0.56	0.56	0.50	9.21	3.00	27.62	6.50	179.50	0.00
110	384	7.81	0.78	5.21	7.29	3.39	0.61	8.17	1.74	14.22	1.13	16.00	0.71
111	269	0.74	1.12	6.69	3.35	2.60	0.00	10.35	1.86	19.21	1.27	24.45	0.73
112	337	5.04	0.30	8.61	0.89	0.89	0.33	8.43	1.60	13.48	1.14	15.32	0.86
113	584	5.31	1.37	3.25	1.71	1.20	0.70	7.89	2.96	23.36	1.09	25.39	0.78
114	379	1.58	0.79	3.17	2.64	2.37	0.00	7.73	1.53	11.84	1.19	14.04	0.81
115	315	2.22	1.59	4.44	0.32	0.32	0.00	11.25	1.65	18.53	1.13	21.00	0.53
116	570	5.44	1.93	3.86	0.88	0.53	0.80	9.34	1.39	12.95	1.33	17.27	0.97
117	306	5.23	0.00	4.58	2.61	1.63	0.25	8.50	3.00	25.50	1.09	27.82	1.55
118	213	1.88	2.82	3.76	0.94	0.94	0.00	8.52	2.08	17.75	1.00	17.75	0.58
119	490	5.51	1.22	2.04	3.27	1.02	0.19	9.07	2.08	18.85	1.63	30.63	0.82
120	310	4.52	2.58	6.45	3.23	1.29	0.10	8.16	1.23	10.00	1.48	14.76	0.76
121	303	3.63	0.99	0.99	1.98	0.99	0.33	7.97	1.73	13.77	1.69	23.31	1.08
122	234	3.42	1.28	3.42	1.71	1.28	0.50	9.00	1.63	14.63	0.94	13.76	0.71
123	266	3.38	0.75	8.27	3.38	2.26	0.11	9.50	2.33	22.17	0.92	20.46	0.92
124	147	4.76	0.00	1.36	2.04	2.04	0.00	7.74	1.73	13.36	1.57	21.00	0.29
125	249	1.61	1.20	2.81	1.61	1.61	0.00	7.11	1.59	11.32	1.22	13.83	0.94

TABLE 12
Values of Selected Variables:
Grading Category #2

Composition Number	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
201	503	1.19	2.19	5.37	3.58	2.58	0.11	8.67	1.41	12.27	1.41	17.34	0.69
202	689	0.15	1.89	5.52	3.05	2.03	0.00	10.13	1.55	15.66	1.52	23.76	0.38
203	442	2.49	1.36	4.07	2.04	1.13	0.00	8.34	1.56	13.00	1.31	17.00	0.81
204	530	1.51	1.70	5.09	2.26	2.07	0.08	8.55	1.68	14.32	1.23	17.67	0.70
205	389	2.06	1.80	6.68	1.29	1.03	0.00	13.41	1.38	18.52	1.40	25.93	0.60
206	283	1.41	2.12	6.01	1.77	1.77	0.20	9.13	1.11	10.11	1.27	12.86	0.27
207	333	0.00	0.30	5.11	2.70	1.50	0.00	9.00	1.85	16.65	1.05	17.53	0.89
208	466	1.50	1.50	4.94	1.50	1.29	0.43	9.32	1.22	11.37	1.24	14.12	0.61
209	482	0.41	0.83	5.60	1.24	0.62	0.00	8.61	2.00	17.21	1.12	19.28	0.68
210	535	2.80	0.56	8.22	7.29	2.80	0.03	9.91	1.74	17.26	1.24	21.40	0.92
211	322	3.42	1.24	2.80	4.35	1.86	0.14	6.71	1.66	11.10	1.16	12.88	0.68
212	416	1.20	1.20	11.54	6.73	4.09	0.00	10.40	1.38	14.34	1.00	14.34	1.03
213	641	2.03	0.62	6.55	1.72	0.94	0.09	13.64	1.57	21.37	1.11	23.74	0.96
214	504	2.98	0.40	8.93	9.52	3.77	0.00	9.33	1.80	16.80	1.25	21.00	0.88
215	239	0.42	2.09	6.28	4.60	2.93	0.00	7.24	1.74	12.58	1.73	21.73	0.91
216	354	0.85	2.54	8.76	3.67	2.54	0.00	9.57	2.06	19.67	1.80	35.40	1.10
217	301	0.00	0.00	5.98	0.66	0.66	0.00	7.34	2.16	15.84	1.27	20.07	1.07
218	613	7.50	2.12	1.96	0.49	0.49	0.67	9.43	1.48	13.93	1.38	19.16	0.75
219	411	1.70	0.24	3.16	2.68	1.70	0.00	8.06	2.04	16.44	1.09	17.87	1.04
220	352	1.70	1.42	4.55	2.84	2.56	0.00	8.80	1.74	15.30	1.10	16.76	0.48
221	572	2.10	1.05	5.42	4.20	2.27	0.00	9.86	1.93	19.07	1.67	31.78	1.06
222	438	2.28	0.68	4.34	0.91	0.91	0.00	8.94	1.53	13.69	1.23	16.85	1.00
223	468	1.71	1.71	5.98	3.85	1.92	0.06	7.55	1.44	10.88	1.23	13.37	0.83
224	515	0.19	1.17	6.80	1.17	0.78	0.00	8.58	1.76	15.15	1.10	16.61	1.00
225	240	0.00	0.00	583	2.08	1.25	0.00	8.28	1.81	15.00	1.00	15.00	1.25

TABLE 13
Values of Selected Variables:
Grading Category #3

Composition Number	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
301	431	0.23	1.16	9.51	6.73	4.64	0.03	10.02	1.34	13.47	1.19	15.96	0.93
302	506	0.40	0.40	7.91	3.36	1.98	0.06	9.92	1.55	15.33	1.00	15.33	0.94
303	433	0.46	1.39	7.39	3.70	2.77	0.00	8.33	1.58	13.12	1.18	15.46	0.64
304	600	0.17	0.50	5.17	3.83	3.83	0.00	7.79	1.64	12.77	1.31	16.67	0.83
305	701	0.14	0.14	4.42	3.85	2.00	0.00	10.46	1.60	16.69	1.20	20.03	0.80
306	598	0.84	1.00	6.02	6.19	5.02	0.03	10.68	1.37	14.59	1.21	17.59	0.62
307	300	0.33	0.00	9.00	5.00	4.33	0.00	8.82	1.48	13.04	1.00	13.04	1.04
308	349	0.00	0.86	8.31	2.29	1.43	0.00	6.23	2.00	12.46	1.04	12.93	0.67
309	490	1.43	1.22	8.57	5.51	2.45	0.07	10.65	1.53	16.33	1.25	20.42	0.75
310	557	0.18	0.00	6.28	5.92	5.75	0.00	9.60	1.41	13.59	1.21	16.38	0.85
311	735	2.86	1.36	9.52	0.95	0.68	0.00	11.31	1.33	15.00	1.23	18.38	0.90
312	627	0.80	0.48	4.47	2.39	1.75	0.00	8.96	1.59	14.25	1.33	19.00	0.73
313	533	1.31	2.06	5.07	2.81	1.88	0.00	10.06	1.43	14.41	0.95	13.67	0.51
314	538	0.37	0.19	8.92	4.09	1.86	0.00	10.15	2.30	23.39	1.15	26.90	1.35
315	303	0.99	2.64	3.63	0.33	0.33	0.00	7.05	1.79	12.63	1.50	18.94	1.06
316	611	0.49	1.80	8.67	2.45	1.96	0.00	7.83	1.59	12.47	1.20	14.90	1.24
317	301	1.00	0.66	5.32	4.98	3.65	0.00	11.15	1.93	21.50	1.56	33.44	1.11
318	438	0.46	1.60	4.57	4.34	3.42	0.00	6.95	1.47	10.19	1.08	10.95	1.13
319	576	0.35	0.52	6.94	1.56	1.22	0.00	9.14	1.58	14.40	1.21	17.45	1.18
320	717	1.39	2.09	5.30	3.21	2.51	0.04	8.96	1.90	17.07	1.62	27.58	1.00
321	506	0.00	0.59	5.53	4.35	2.57	0.00	8.88	2.28	20.24	1.14	23.00	1.14
322	480	0.83	0.42	7.29	5.21	3.13	0.00	10.91	1.22	13.33	1.09	14.55	0.85
323	371	1.08	0.00	6.74	3.77	3.77	0.14	11.59	1.45	16.86	1.05	17.67	0.90
324	404	0.99	0.50	6.44	2.97	2.97	0.00	8.78	1.77	15.54	1.30	20.20	0.85
325	486	1.03	0.21	7.82	2.67	1.44	0.00	11.30	1.54	17.36	1.12	19.44	0.96

TABLE 14
Values of Selected Variables:
Grading Category #4

Composition Number	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
401	676	0.30	0.00	11.54	3.55	2.51	0.00	9.94	1.62	16.10	1.20	19.31	0.66
402	580	0.52	0.34	7.59	4.66	2.93	0.00	8.79	1.53	13.49	1.10	14.87	0.74
403	379	0.00	0.26	7.65	9.23	6.07	0.00	11.48	1.74	19.95	1.19	23.69	0.75
404	657	0.00	0.46	4.26	3.65	2.74	0.00	10.95	1.50	16.43	1.29	21.19	0.90
405	946	0.74	0.85	5.29	4.23	2.75	0.08	9.46	1.72	16.31	1.29	21.02	0.82
406	582	0.17	0.34	5.67	6.01	3.95	0.00	9.86	1.69	16.63	1.30	21.56	0.78
407	713	0.56	0.28	7.85	7.57	4.49	0.02	14.85	1.09	16.20	1.10	17.83	1.05
408	482	0.41	1.04	8.51	2.28	1.87	0.00	14.18	1.42	20.08	0.89	17.85	1.11
409	626	0.00	1.12	6.23	2.08	1.92	0.00	10.10	1.27	12.78	1.32	16.92	0.95
410	418	0.24	0.48	10.29	5.26	4.55	0.05	9.95	1.40	13.93	1.07	14.93	0.93
411	688	0.00	0.15	7.41	4.80	3.20	0.00	8.49	1.59	13.49	1.19	16.00	0.91
412	623	0.96	1.28	6.58	2.57	2.41	0.00	10.56	1.55	16.39	0.97	15.97	0.85
413	750	0.93	0.00	4.93	6.27	2.80	0.00	9.04	1.84	16.67	1.05	17.44	1.00
414	418	0.48	0.24	7.18	4.78	4.55	0.05	8.20	1.24	10.20	1.24	12.67	1.15
415	1049	1.24	1.53	4.67	3.43	2.38	0.08	8.74	1.32	11.53	1.34	15.43	0.66
416	270	0.00	0.00	4.81	2.59	2.59	0.00	7.50	1.64	12.27	1.10	13.50	1.00
417	855	0.23	0.58	7.37	6.08	3.16	0.00	9.94	1.34	13.36	1.21	16.13	0.79
418	789	0.38	0.51	8.37	5.58	4.06	0.00	11.78	1.56	18.35	1.16	21.32	1.24
419	729	0.14	0.55	9.05	3.43	1.78	0.00	9.23	1.93	17.78	1.28	22.78	1.22
420	415	0.48	0.00	5.54	3.61	2.65	0.00	8.83	1.81	15.96	1.04	16.60	1.12
421	660	0.00	0.00	6.21	2.58	2.27	0.00	8.46	1.77	15.00	1.07	16.10	1.00
422	366	0.82	0.55	6.56	5.74	4.10	0.00	7.96	1.44	11.44	1.28	14.64	0.92
423	815	0.00	0.25	10.92	6.63	3.68	0.00	10.58	1.75	18.52	1.29	23.97	0.82
424	757	0.00	0.13	5.68	3.43	2.91	0.00	9.35	1.84	17.20	1.26	21.63	0.97
425	777	0.51	1.29	4.76	2.45	1.03	0.00	8.18	1.98	16.19	1.26	20.45	0.95

APPENDIX G

Correlations for Variables

TABLE 15
Correlations for Variables*

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
Q	.64	-.65	-.44	.45	.44	.54	-.44	.31	-.30	-.06	-.19	-.16	.35
V1		-.32	-.17	.24	.27	.21	-.09	.36	-.17	.09	-.06	-.03	.18
V2			.33	-.49	-.28	-.40	.72	-.15	.23	.10	.29	.29	-.33
V3				-.33	-.38	-.39	.29	-.17	-.05	-.15	.43	.27	-.46
V4					.47	.44	-.34	.39	-.20	.09	-.30	-.21	.31
V5						.87	-.23	.26	-.18	.02	-.16	-.12	.20
V6							-.28	.25	-.29	-.08	-.16	-.15	.18
V7								-.05	.14	.08	.22	.22	-.22
V8									-.25	.45	-.07	.09	.08
V9										.74	.32	.50	.10
V10											.27	.54	.14
V11												.94	-.38
V12													-.29

*Pearson Correlation Coefficients
± .17 -- significant at the .05 level

Variables

Q Grading Category (Holistic Score, Quality)
V1 Total Words
V2 Spelling Errors per 100 Words
V3 Sentence Errors per 100 Words
V4 Words of Three Syllables per 100 Words
V5 Words of Four or More Syllables per 100 Words
V6 Different Words of Four or More Syllables per 100 Words
V7 Errors in Use of Words of Four or More Syllables per Total Words of Four or More Syllables Used
V8 Words per Clause
V9 Clauses per T-unit
V10 Words per T-unit
V11 T-units per Sentence
V12 Words per Sentence
V13 Cohesive Devices per Sentence

A P P E N D I X H

Predictors of Writing Quality

Resulting from a Multiple Stepwise Regression Analysis

TABLE 16
Predictors of Writing Quality
Resulting from a Multiple Stepwise Regression Analysis*

Step	Variable	R	R^2	Increase in R^2	B	F
1	V2	.655	.428	.428	-.138	8.67
2	V1	.780	.640	.211	.033	57.20
3	V6	.840	.705	.066	.315	8.76
4	V3	.850	.721	.016	-.137	1.93
5	V5	.854	.730	.008	-.091	2.04
6	V9	.857	.734	.005	.577	0.22
7	V12	.861	.742	.008	.056	5.02
8	V13	.867	.751	.010	.657	4.91
9	V7	.869	.754	.003	-.670	1.79
10	V10	.870	.756	.002	-.189	1.85
11	V11	.875	.766	.010	-1.186	3.19
12	V8	.876	.768	.002	.160	0.57
(Constant)					(1.478)	

*All variables except Words of Three Syllables per 100 Words entered the final prediction equation.

Variables

V1 Total Words
V2 Spelling Errors per 100 Words
V3 Sentence Errors per 100 Words
V4 Words of Three Syllables per 100 Words
V5 Words of Four or More Syllables per 100 Words
V6 Different Words of Four or More Syllables per 100 Words
V7 Errors in Use of Words of Four or More Syllables per Total Words of Four or More Syllables Used
V8 Words per Clause
V9 Clauses per T-unit
V10 Words per Sentence
V11 T-units per Sentence
V12 Words per Sentence
V13 Cohesive Devices per Sentence